

22.

PRICE.

NATIONAL LIBRARY OF MEDICINE

Bethesda, Maryland

Gift of

The New York Academy of Medicine



New York Public Library

Price

~~W-T~~

NURSES AND NURSING

Price

WZT

THE NEW YORK
PUBLIC LIBRARY

ASTOR, LENOX
TILDEN FOUNDATIONS



LISBETH D. PRICE.

NURSES AND NURSING

BY

LISBETH D. PRICE

District and Hospital Nurse



He gives His angels charge of those who sleep;
But He Himself watches with those who wake.

—Ugo Bassi.

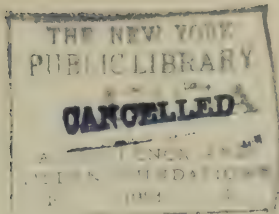
MAY 20 2009

THE NEW YORK ACADEMY
OF MEDICINE LIBRARY

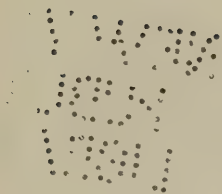
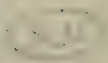


MEADVILLE PENNA
FLOOD AND VINCENT
The Chautauqua-Century Press
1892

~~CANCELLED~~



Copyright, 1892,
By FLOOD & VINCENT.



LIBRARY *The Chautauqua-Century Press, Meadville, Pa., U. S. A.*
Electrotyped, Printed, and Bound by Flood & Vincent.

NOV 21 1952

NEW YORK ACADEMY
OF MEDICINE

286477

TO MY FRIEND
AND
TEACHER
ALICE FISHER

Ms. A. 9. 2. 2. 1.

INTRODUCTORY NOTE.

In presenting a manual on the training of nurses there must be made evident, first, the necessity for such a work, and second, the capability of the author to present it. It is true that a number of manuals on this subject have been written, but it is also true that the developments in the details of nursing occasioned by the improvement in both medical and surgical treatment are such as to require their frequent revision or the issue of new works. The author has had abundant opportunity, in her service as a nurse in the Philadelphia, Pennsylvania, and Medico-Chirurgical Hospitals, and in the hospital in Meadville, Pa., besides her work in private nursing and in private hospitals, to fit herself for such instruction. A careful study of the manuscript has impressed me with the accuracy with which she lays down the laws for the conduct and direction of the nurses, and their responsibilities toward physicians, patients, and themselves. The duty of nursing is not now delegated to the ignorant and to those incapable of discharging any other duties in life. Instead of the Sarah Gamps and Betsey Prigs,—women who engaged in the work simply because there was no other opportunity for them to prey upon humanity, we now have the followers of this vocation drawn from the best ranks of the community. The capable, well-educated nurse is now regarded as almost

as essential as the educated physician. In the department of surgery, and particularly that of peritoneal surgery, the operator prefers to leave the after treatment of his cases in the hands of a nurse thoroughly educated in his methods of practice, than to place the patient in the care of the family physician. In presenting this book I feel that Miss Price has written a work that is worthy the earnest study not only of every novice, but of every nurse who wishes to keep herself abreast of the work of the day.

E. E. MONTGOMERY, M. D.

*Prof. Obstetrics and Gynecology in the Medico-
Surgical College of Philadelphia.*

AUTHOR'S PREFACE.

The writer of this book—or perhaps compiler is the truer term—holds the opinion that a strong line of demarcation should be drawn between that which a nurse should know and that which she should not know, that the theoretical portion of her studies must of necessity be more or less superficial.

The text-books that have come under her notice are—in the main—good works, but at times they are prone to enter into certain subjects too deeply ; while other subjects bearing upon the practical work of the nurse might be more fully discussed.

It is hoped that this little book may, in a small degree at least, help both the head nurse in teaching and the probationer in her studies, and it is especially desired that it may prove helpful in the home.

A facility of expression has been sought in a direct method of treating the various subjects, in which no claim is made for the literary style of the work.

Gray's "Anatomy," Wilson's "The Roller Bandage," Joseph Swayne's "Obstetric Aphorisms" and Dunglison's "Medical Dictionary" have been valuable aids, and the author wishes here to make grateful acknowledgment.

LISBETH D. PRICE.

January, 1892.

CONTENTS.

CHAPTER	PAGE
I. LIMITATIONS TO THE DUTIES OF THE NURSE	1
II. DUTY OF THE NURSE TO THE DOCTOR, TO THE PATIENT, AND TO HERSELF	7
III. CARE OF WARD AND SICK-ROOM	17
IV. BATHS—ENEMATA—COUNTER-IRRITANTS	23
V. BONES — JOINTS — SKIN — MUSCLES — LYM- PHATICS—NERVES	45
VI. THE CIRCULATION—ORGANS AND PROCESS OF DIGESTION—ORGANS OF RESPIRATION AND CIRCULATION—ORGANS OF ALIMEN- TARY CANAL	59
VII. GENERAL REMARKS ON FEVERS	76
VIII. SCARLET FEVER—MEASLES—DIPHTHERIA	88
IX. TYPHOID FEVER	97
X. PNEUMONIA—PLEURISY—PHTHISIS	103
XI. ANTISEPTICS—HEMOSTATICS	111
XII. THE SURGICAL OPERATION	123
XIII. BANDAGES	133
XIV. EMERGENCIES	156
XV. PREGNANCY	172
XVI. LABOR	180
XVII. PERIOD OF LYING-IN	195
XVIII. CARE OF THE CHILD	203
XIX. GYNECOLOGY	219
XX. THE NURSE IN THE HOSPITAL	225
XXI. FOOD FOR THE INVALID—THE INFANT'S FOOD	251
APPENDIX.	
ABBREVIATIONS	283
WEIGHTS AND SYMBOLS	286
MEDICINES AND DOSES	288
A FEW IMPORTANT DEFINITIONS	306

NURSES AND NURSING.

CHAPTER I.

LIMITATIONS TO THE DUTIES OF THE NURSE.

THERE are few professions—perhaps it may be said with truth, that there is *no* profession—which has its limitations marked with such rigid distinctions, as that of nursing.

Medicine, theology, art, music, law,—all these have in them depths unsearchable, and he who drinks of any one of these wells of knowledge should profit by Pope's advice and "drink deep, or taste not." Only to the nurse who would gain proficiency in her calling does the mandate apply: "Thus far shalt thou come, but no farther." And she who heeds not the warning finger will fail, *miserably fail*, as surely as she is a woman.

There are many reasons accounting for these strong limitations. The chief one is this: the profession of nursing is dependent upon the medical profession; from it, in fact, it has emanated. Yet nursing is a profession in itself, when kept within its limits; one to which many of the noblest and most intellectual women of the century nearly past have given their all—mind, money, and life.

And it is the cultured, the educated, and the womanly woman who intuitively discovers and appreciates these limitations and does not venture beyond them. Once she

oversteps the boundary of her prerogative in any way, she ceases from that time to be a good nurse. Her intelligence, her experience, her knowledge amount to nothing if she forgets the one great object of her training, which is the revealing of her sphere, and teaching her how to keep it.

What that sphere is, will now be considered.

The nurse should read no books of medicine. If she wishes to be a doctor, let her start at once in the prescribed manner, and then the whole field of medicine is legitimately open to her, but if she means to be a nurse, to her, medicine must remain a sealed *arcanum*.

The instruction she receives during the period of her training, added to the practical work in the wards, the intelligent nurse will find to be sufficient. In the latter branch of her profession—ward work—the word “limitation ” does not apply ; for where is the nurse who is perfected in patience, gentleness, bravery, aptness, works she a lifetime?

The really intelligent nurse never complains that she does not learn enough—on the contrary, she finds that the more she learns, the more there is yet to know. Reaping constantly by observation from the plenteous harvest that is ever around her, her mind develops, she grasps words, meanings, modes of operating, etc., in a quick, intelligent manner. To such a nurse, life never is or can be dull, for she feels herself to be of use in her sphere ; to her patients and to the physicians, she becomes indispensable.

To her as to no one else, these words in the New Testament apply : “ Unto every one that hath shall be given ” ; but to the nurse of another type, applies the remainder of the text : “ But from him that hath not shall be taken away even that which he hath ” ; the latter type constantly complains that she is learning nothing ; that her ward is crowded with fretful chronics (whereas in reality it is from

these same despised chronics the nurse learns most); and when night comes she is too weary to give the proper attention to class. Could a peep be taken into the room of such a nurse, there would probably be seen a dozen or more medical books, which she rarely has an opportunity of reading, and when she does read, she burdens her brain with useless knowledge, which she probably remembers not much longer than over night. Such a nurse will be likely also to disgrace herself by the use of obscure medical terms which serve only to expose her real ignorance as to the fitness of things, and to bring down upon her the censure of the head nurse, the disgust of the doctor, and very probably the scorn of her patients.

The sensible nurse will be most careful in the use of technical terms; there can be no objection to her knowing the whole vocabulary from A to Z—in Use of technical terms. fact it is a good thing for her to be familiar with the terms in general use, for she will then have a clear knowledge of what is discussed concerning her patient,—but parading that knowledge spoils it all.

Here is an instance where a technical term is both apt and proper: Suppose the doctor—on first seeing a patient—should say to the nurse, “Do you know from what this man is suffering?” Now supposing the patient to have heart trouble she should not in his presence speak of it in those words, but use the medical term, and say, “I have heard he has a cardiac trouble,” which will tell the physician at once where to begin the examination, and the patient will be none the wiser; the doctor in such a case will not consider the nurse pedantic, but if he notices it at all, will be likely to say to himself, “She knows her business,” which is the greatest compliment she can receive.

Take the reverse, where a medical term is not only useless but decidedly objectionable. Says the doctor to the nurse: "Has this man had nose-bleed?" "Yes, doctor, he had quite an attack of epistaxis last evening"; such a nurse will more than likely have soiled medicine bottles in her ward closets, and her patients probably have long finger nails.

Doctors object to the pedantic nurse; they would far rather have an ignorant, "good-old-time Sairy Gamp" whom they could command and maybe swear at a little if the occasion required, and who *because* of her ignorance carries out their orders to the letter. Although they of course dare not trust this type of nurse with any serious case, yet she is preferable to the one to whom the doctor cannot give an order without feeling that it is afterward commented upon and criticized.

No doctor objects to the nurse being intelligent, for if her knowledge is used in the proper manner she will be of great assistance to him, and it takes him but a short time to discover her worth, without her telling him. He will also trust her with dangerous medicines, and will feel comfortable at leaving her in charge of critical surgical cases.

The expression of opinions should be, in the professional life of the nurse, a thing most rare; she should have them, plenty of them,—she would not be worth a straw if she had not,—but she must keep them locked in the inmost recesses of her mind. She may draw inferences, make distinctions, may have mental reservations on all she hears discussed, and she becomes the wiser thereby; but even if her opinion should be asked, in most instances she should refuse to express it, especially at the bedside of the patient, and in the presence of the physicians. A doctor might say in a moment of excitement,

Improper
use of tech-
nical terms.

Expression of
opinions by
the nurse.

especially if much interested in the case: "Do you think so, nurse?" The safest plan for her and the easiest, is to say, "I really do not know, doctor," and he will have no worse opinion of her, for so answering. But it may sometimes happen that the doctor will ask her if she thinks a certain medicine has caused a particular symptom to appear in a case. Then she should give her opinion frankly, but not before, even though she may have noticed the effect of the medicine; when asked, it becomes her duty to know and tell. In general she makes her report as events occur, and usually the doctor accepts it without comment, drawing his own conclusions, which she should allow him to do without the slightest hint or suggestion from her.

Under no conceivable circumstances should she give her patients internal treatment, though of the mildest kind, unless ordered by the physician. A drop of oil of cloves, to put in an aching tooth, or a drachm of peppermint water for indigestion, or anything, however harmless in itself, if given unordered by the doctor, is disloyalty to him and a criminal offence against her profession. In the making of outward applications she should be most particular, waiting for the doctor if possible; it is only permissible in cases of collapse or hemorrhage for her to act upon her own responsibility. In hospitals, a doctor may be called in at any hour, but often in private work, she must act for herself. The intelligent nurse will in such cases forestall such an emergency by asking the doctor what she shall do, should such or such a thing occur.

In the examination for graduation, she will be more sure of high marks if she answers the questions within the bounds of the "limitations." Although the examining physician may ask her a question entirely beyond her studies and ex-

No internal
treatment
should be
given by the
nurse.

perience, it is a question whether he will be pleased or otherwise if she can answer it. Here is an instance: A doctor once said to a nurse just as he had finished questioning her: "Tell me, before you go, nurse, if you know what the difference is between thrombosis and embolism." She hesitated an instant, and then answered frankly: "Doctor, I cannot tell the difference, I know that both are obstructions in bloodvessels, one caused by a clot, the other by a foreign body; but which is which, and the difference, I cannot tell; there always seemed to me to be about as much difference between them as between a man sitting on a fence, and a fence with a man on it." Whether the nurse answered thus from discretion or ignorance, will always remain a mystery; but the chances are, she received as high a mark as if she had known. That was one of the questions which somewhat over-stepped the "limitations."

CHAPTER II.

DUTY OF THE NURSE TO THE DOCTOR, TO THE PATIENT, AND TO HERSELF.

FOREMOST in the ranks of the virtues the nurse should possess is loyalty—loyalty to the doctor, loyalty to the patient, loyalty to herself, and to her fellow nurse. Loyalty always, and ever, and under all circumstances! First will be considered her duty to the doctor. To the thoroughly good nurse it matters little by what doctor she is employed; it does not enter her sphere to question or argue about the different schools, but for whomsoever she works, the doctor is her director; there is no appeal from him with whom she is working to accomplish the same end—the restoration of the patient to health. She should be as “wise as a serpent,” quick to understand and capable of obeying intelligently whatever orders may be given her; “harmless as a dove,” in that she remains quite oblivious to anything of greater importance than that which is given her to perform. So—be it the old school or the new to which she gives her fealty—most loyal should she be to it, if she would rightly perform her duty.

Loyalty
chief of
virtues in
nursing.

The nurse's
duty to the
doctor.

Every young woman, before entering a training school, should analyze her motive for desiring to become a nurse. If she decides to take up nursing after the best years of her life are spent, all the youth and vigor dried in her veins, and as a last resort endeavors

The nurse's
duty to
herself.

to go through with the training in the hope of making a scanty living by taking an easy case now and then, she will be of no use in the profession and of no credit to it.

Yet even this is better than another class of women, who, although they may not lack youth and energy, are led by motives which are only frivolous and impracticable. This sort of applicant usually starts into her training with the romantic idea that nursing consists merely in smoothing the dying patient's brow, but when she discovers that it consists in smoothing his bed as well, she also finds that all sentimental rhapsody and romantic ideas are swallowed up in hard, practical, every-day work. This type rarely remains after the month of probation ; but if through an oversight she should be allowed to continue, she will probably shirk all she can, when detection is not sure, and may not be above bribing the patients to do her work, and just that work, too, which is the foundation of thorough training, consisting of the manual toil of "annihilating dirt." These young women are black sheep in the fold of the Nursing Profession. The head nurses should do all in their power effectually to banish such applicants from the training schools ; however, they often help themselves toward expulsion by some act of gross insubordination, either by defying their superior officers or by unprofessional behavior toward the physicians and patients.

Quite as important as the duty of the nurse to the doctor is her duty to herself ; here again, appear the "limitations," and it is the strong-minded, true, and good woman, who knows just where to draw the line. The nurse should always be *professional—strictly, rigidly, absolutely professional*. She may think that she can present *her* side of the argument, and say, that often the doctor is not professional, and is she to blame if he talks on non-professional subjects? Yes, she

is to blame; he would soon weary of talking to the nurse who looked bored, her face expressing as plainly as words, "You would better do your duty and allow me to do mine." The longer she lives in her profession, the more she will see the necessity of firmness in this respect, and the doctor very soon discovers with what manner of woman he has to deal.

As there are two types of nurses—the good and the worthless—so there are two types of doctors—one the nurse's friend, the other her enemy; we will take a glance at each. A doctor enters the ward to make his rounds; the nurse may be busily working—is behind
One type of doctor.
 time, or perhaps she has got through, and is sitting at her little table waiting for him. He, however, does not notice if either is the case, but saunters in with a languid "Good morning, Miss ——, I don't feel equal to work, went to the theater last night, am all broken up this morning—any one need me particularly?" Not waiting for her answer he continues, "Don't you girls ever go to to the theater, or have any fun? Should think you would die, spending all your time in these beastly wards."

The nurse, if sitting, should immediately rise on his entering, and to such queries as the above she could laugh pleasantly and say, "Oh, yes, we have lots of fun in our own way," and then resume, "I think *all* your patients would like to see you this morning, doctor," and taking the towel she should walk to the first bed, and during the remainder of his rounds bring him unobtrusively back to his work whenever he wanders, which is generally not an easy task, but the nurse with tact can manage it. The name of that genus of doctor is legion, and the nurse should beware of him; he is no help to her in her work, but a decided hindrance; he does not know how to appreciate good nurs-

ing when he sees it, nor would he notice if his patients were neglected.

The other type of doctor, who is always the stanch friend and champion of the nurse, acts in a very different manner; he enters the ward at the proper time with a brisk business-like step; after a bright "Good morning, nurse," he will at once begin his rounds, cheering the patients by his kindly interest in them, and occasionally explaining to the nurse the action of a certain medicine, being careful to confine his information within the limits of usefulness to her; and as he leaves, perhaps he will encourage her by saying, "Your ward seems bright and pleasant this morning," thus showing his appreciation of her nursing; or if she has been tardy in her work for a day or so, he might say, "Nurse, I will defer making my rounds hereafter until later, to suit your convenience; I know you have much to do here, and you seem to be pressed for time. I prefer to have the ward in perfect order before I begin the rounds." For such a doctor, the nurse is generally willing to work especially hard.

The "doctor's duty to the nurse," is a perversion of fact that looks distorted, even in writing; no such relation exists.

The nurse an automaton. The nurse to the doctor should be a human automaton, that listens to him attentively, and obeys him implicitly, nothing more; and she should do all in her power to be looked on in this light, and in it she will be respected. Her training school enacts a code of laws protecting her both in hospital and private work, which doctors and patients are bound to respect, and which excludes all personal attention of any sort. It is true the nurse often has much to bear, but when in uniform she should be capable of bearing almost

anything, and equal to any emergency that may occur. She can ignore unseemly language and remain utterly oblivious to any intended rudeness, which in her social life, she ought not, and would not countenance; her uniform saves and shields her, and if she does her part no harm will come to her. She should bear in mind that socially she is not acquainted with the doctor, and at the risk of being con-
 sidered prudish—which would be erring in the
 right direction—she should not under usual cir-
 cumstances, recognize him outside the hospital. It is
 beneath her dignity as a woman, and also as a nurse
 to accept any favors from the doctor. It is true that real
 regard may sometimes be felt and may become reciprocal,
 but that should cause her to be still more strictly professional
 in the hospital, while the right-minded doctor will be more
 careful to show his regard for her in the proper and prescribed
 manner.

The nurse's
social posi-
tion.

She should constantly bear in mind the fact that she is in a training school and should expect to be disciplined. If her head nurse should prove to be exacting and dictatorial, prone to depreciate, rather than to extol and encourage her efforts, instead of resenting it, she should endeavor to do still better, remembering that it cannot last forever, and after all it has its advantages. A severe head nurse is always preferable to one who is lax and indifferent; she is by far the better teacher, and in the end the nurse will understand how to appreciate that which she at first considered an imposition. There are three qualities the nurse must possess, in order to become efficient in her pro-
 fession, namely: common sense, truthfulness
 and obedience; in them is contained every
 quality requisite to the making of a thoroughly good
 nurse.

Necessary
qualities in
a nurse.

If she has common sense she will know how essential it is to keep herself, as well as her patients, clean. Common sense will teach her, whenever she is working, to improvise a system in order to accomplish that which she has to do in the best and quickest manner; it will teach her to take as much interest in the making of a milk toast as in the suppression of a hemorrhage, teaching her the truth of the words: "He that is faithful in that which is least is faithful also in much." Common sense will teach her when it is absolutely necessary to defer or omit the doctor's order; she will not waken a patient to give him his sleeping draught, will not obstinately insist upon giving him food at stated intervals, when she discovers it makes him ill—simply because it was so ordered. Common sense will not allow her to impose upon her fellow nurse tasks she does not fancy herself, and when she becomes head nurse it will cause her to respect the feelings of those under her command, not rebuking them before patients, helping them over hard places during the period of their probation which is hard at its best.

Truthfulness and obedience will teach her to be strictly correct in all her reports. She will be quick and observing, following every minute order and noticing every symptom, and rather than leave a patient uncomfortable or neglect an order, she will frankly confess her inability to attend to so much, and in the end she will be the wiser and happier for it.

The nurse should on no account tamper with medicines, either in treating herself or her fellow nurse. Outward applications are of course admissible, but beyond them she should, when indisposed, report at once to the head nurse, and receive proper medical attention; because she has noticed the

Common sense.

Truthfulness and obedience.

As regards use of medicines, stimulants, etc.

doctor ordering this or that for a patient with good effect, it does not follow that the same medicine will apply in her case. She is not a whit more capable of treating herself or fellow nurses, than she is of treating her patients, and although the former is not such a criminal offense against hospital regulations as the latter, and might not be followed by expulsion from the school, yet it unquestionably oversteps the limits which the nurse should so carefully observe.

She should never indulge in stimulants and narcotics even if she is on night duty and cannot sleep during the day, or on day duty and cannot sleep at night; she should report her condition and receive the proper medicine from the doctor; she also does violence to her profession in the indiscriminate use of morphine or bromide, whiskey or caffeine.

The nurse who makes a careful, conscientious study of her work will discover a vast field for ability, labor, and tact; in this branch of it, again, first and foremost comes "loyalty." Many are the secrets the nurse hears at the bedside of her patient in delirium, or when under the influence of a narcotic or an anaesthetic; that which is heard at such times should be held as sacred as when told in the confidence of friend to friend. Nor should she talk of her patients in a manner that would cause them to be recognized; if the case is mentioned then the name should be withheld, or if she speak of having "So and so" for a patient then she should be most careful how she talks of the illness. No one but a hypochondriac wishes to have his ailments discussed, or cares to feel that every one knows just how he behaved when sick. The nurse should allow her patient to have his own way, so long as it does not interfere with her duty to the doctor, or to herself. All whims should be humored if possible; often certain objects or sounds in the room or ward

Duty of the nurse to her patient.

Professional secrets.

become annoying—a picture, an ornament, the rocking of a chair, the ticking of a clock. These annoyances should be removed at once. She should be always gentle in her attitude toward her patients, should teach herself to acquire the keen-

Sympathy
for the
patient. est sympathy for all cases, no matter what they may be, however hideous, however offensive or loathsome, so that the most unpleasant offices

are performed by her, with a cheerfulness and willingness which she should take pains to make the patients comprehend, thus saving them much worry, embarrassment, and dread. There will from this sort of treatment ensue a tranquillity of mind which is conducive to improved health as well as to grateful feelings toward the nurse, which will be ample reward for her labor. In severe cases she should consult the doctor in regard to changing the linen and bathing the patient; great harm might follow should this be done at a critical period of the disease. But however serious the case, the nurse should always, night and morning, bathe the spine, hips, shoulders, elbows, and ankles with diluted alcohol, and the face and hands with water. If the water is hard sprinkle a little borax in it; if the patient has fever the solution used may be cold, but if there is exhaustion or debility, the solution should be warmed; so also should the water for the face and hands. The solution of alcohol and water may be warmed by immersing the bottle in hot water. Her touch should be gentle and firm. She should always use the hand in bathing the back with alcohol, and should be particular that the towels used are soft.

Watchful-
ness of a
patient's
wants and
condition. She should endeavor to anticipate the wants of the patient; when the lips are parched she should wet them frequently, and offer a drink of water occasionally when the tongue is dry and glazed, thus making it unnecessary for the patient

always to ask for what he desires. It often requires a painful effort to speak when in such a condition, and he sometimes falls into a stupor, and is unable to ask for, or even to know, his wants. She should be careful not to allow too great an accumulation of urine to collect in the bladder, but after eight hours if the doctor does not notice the patient's condition she should call his attention to it, or if he is not present, in most cases she should catheterize the patient, thus avoiding great suffering and perhaps harm as well. She should also watch the state of his bowels, reporting if the evacuations are too frequent or not sufficiently so.

The nurse should be very particular regarding her voice and manner in the ward and sick-room. If her voice is not low naturally, she should study to acquire the proper modulation, speaking always

The nurse's
voice and
manner.

in a low, cheerful tone, never laughing loudly, or addressing the patient suddenly, so as to startle him ; she should allow no talking in the sick-room either to herself or to her patient until he is able to listen and understand what is being said ; she should not walk too quickly and never noisily, but wearing thin shoes, step lightly, being careful not to hit the side or end of the bed, which causes an unpleasant jar ; she should not eat, yawn, lounge, or even read, but while on duty devote all her time to her patient. She in fact should be a model of good deportment, again the human automaton, that is apparently proof against pain or fatigue, never either "hungry, sleepy, tired or cross." It requires some self-discipline, some self-sacrifice to accomplish this, but it can be, and is accomplished by the thoroughly good nurse. When off duty she should relax, and for that period of time allow her patients to be wholly forgotten.

She should
relax when
off duty.

How to observe and detect symptoms will be discussed under the headings of the various different diseases—medical and surgical.

CHAPTER III.

CARE OF WARD AND SICK-ROOM.

SYSTEM is the first essential in any form of work, and it ranks pre-eminent in regard to nursing.

The ward work of the nurse who is incapable of establishing a system, will amount to absolutely nothing but drudgery, her work will constantly heap up on her hands; she cannot study her cases because she has more than she can do to keep things in running order; she becomes flustered when the doctor arrives, fearing he will detect her tardiness, and she is *distracted* and preoccupied in manner trying to recollect if there are any duties she has omitted, while he makes the rounds. There can be no prescribed rules set down for systematizing the nurse's work, but whether she has much or little to do, if she has a ward of thirty patients or three, or a private room with one, she should have a system. The dead-and-alive nurse will find it almost an impossibility to run a ward alone, but the energetic, active woman who is not afraid of work will have the busiest ward in order by 10:30 a. m. When she is very busy she should confine her attention strictly to the nursing of her patients, attending to their beds and to the giving of their medicines. Her tact will teach her to be so kind and cheerful with them, and without any loss of dignity on her part, that the convalescent patients will be always willing to help her and she can

allow them to sweep and dust the ward, wipe off the tables, and do many a little service for her.

But these helpers she should never allow to touch the patients or their beds ; the line should be strictly drawn there, even at the giving of a glass of water,—they are not nurses and do not know how to handle the sick. The nurse may allow them to take things to and from the bedside, but that done their work ceases, and she should herself administer everything to her patients. Some training schools have strict rules regarding this part of the ward work, forbidding the nurses to enlist the services of any one. But if the nurse entertained the proper feeling for her patients and sympathy for their sufferings—which would not allow any one but herself to touch them—such a rule would soon become obsolete. When she has charge of a ward in which there are but six or eight patients, such as an acute medical ward, an eye or an operation ward, she should do everything herself, and so of course in private work, she should herself take the full care of her patient, and all that belongs to him while he remains in her charge.

The pride of the nurse in a surgical ward should be the ward carriage, in which are kept the surgical supplies and the antiseptic dressings. She should always keep enough of everything on hand, but not so large a supply as to crowd the carriage, which should be kept in perfect order ; all articles she should wrap up and mark separately, keeping them always where she can lay her hand upon them at any time ; this is indispensable when an emergency case is brought into her ward. She should have plenty of lint spread with the ointments in general use in the ward, ready at hand, and the bottles always filled with antiseptic solutions. She

Limit of assistance from convalescents.

Care of the ward carriage.

should take entire charge of the carriage herself, even to the polishing of the brass and the washing of the wheels.

There should be no carpet, curtains, or drapery of any sort in a surgical or an acute medical ward, as all such things are collectors of germs. In a medical ward, Furnishing of surgical ward. where there are chronic cases, a strip of carpet can be laid down the center of the ward or at each side to deaden the footsteps ; and curtains can be hung at the windows and cushions be put on the chairs, but they must be cleaned often and thoroughly ; the curtains washed and the carpet shaken weekly. The nurse should do all in her power to make the chronic wards look as home-like as possible, for there are in these wards permanent patients, often remaining in the hospital for years.

When the carpet cannot be taken up and shaken it should be swept with a broom, wetting it slightly with water in which tea leaves are kept ; she can Sweeping ward and sick-room. easily get them after each meal, from the cook.

For sweeping a ward use a large soft brush like a dust-brush with a broom handle on it ; this collects, but does not raise the dust like an ordinary broom. Always use a damp cloth for dusting, a dry one will scatter the dust which will soon settle again. A ward should be swept and dusted after each meal ; a room once daily. The broom should be used very little in sweeping private rooms ; if the carpet is wiped off, using an antiseptic solution, it will be found much preferable to sweeping.

The utensils used in the sick-room should be thoroughly washed every morning, with water containing a little *aqua ammonia*, also the feeders and glasses Care of medicine closet, etc. each time after using should be washed at once.

The medicine closet should be kept spotless ; always after the the medicines are administered each bottle should be wiped

with a damp towel kept for that purpose, before it is set back into place. The medicine list should be kept correct and neat, and in pouring out the medicines, care should be taken to hold the label uppermost; labels will keep clean a long while if properly cared for.

In private nursing it is better to have a second room if possible, where the linen, medicines, and apparatus for cleaning may be kept. In any case keep the medicines out of the patients' sight and reach.

In the wards the patients should be bathed once weekly; Bathing the patient. their toe and finger nails kept clean, also their heads and teeth. In private work the patient should be bathed as often or as seldom as he wishes, within reason. These rules apply to chronic cases, the exceptions depend upon the disease. Fever cases are usually bathed once or more daily. In rheumatism the patient is often for a time not bathed at all. In surgical cases the doctor should be consulted both as to the time for bathing and changing the bed linen. How to bathe the patient and how to change the linen in acute diseases will be shown under the proper headings.

In the presence of the doctor and head nurse, a nurse Hospital etiquette. should always stand. When the doctor makes the rounds she should attend him, carrying a fresh towel and standing on the opposite side of the bed, being careful to keep out of the light and out of the way.

She should be active and quick, not allowing the doctor to unfasten the patient's shirt or night-dress; if he wishes him to sit up or turn over, the nurse, not the doctor, should Management of towel and patient. help him. In spreading the towel over the patient's lungs the side of the towel that is ironed in should be laid next the doctor's face, and when he is through it should be folded again; unless

an accident happens to it, one towel used in this way will last around the ward, because the same side will always touch the doctor's face.

When there are wounds for the doctor to dress, the nurse should have the articles he is to use ready for him, arranged on a table by the bedside and covered with a towel. She should not—unless Arrangement of articles for doctor's use. it is unavoidable—leave the doctor while he is in the ward. She should allow no talking or rattling of papers after he enters. The patients who are out of bed should be seated each at the foot of his own bed, and unless lame or too weak they should rise when the doctor reaches them.

The ward should be well disciplined; no quarreling, swearing, or boisterous behavior should be allowed in Ward discipline. it, or anywhere within the limits of the nurse's authority. She should require the men patients and their friends to remove their hats upon entering the ward, and have a row of nails in an unobtrusive corner on which they may hang them, not allowing them on bedposts, beds, chairs, or window-seats.

When a patient is very sick or dying, absolute quiet should be enforced in the ward; the convalescents should be sent to visit other wards in such a case. A patient should never be alone when dying; his friends should be there if possible; if not, when the nurse cannot sit beside him she should have a patient When a patient is dying. take her place. One may relieve the other at short intervals until the end comes. Patients are prone to think and speak lightly of death, after becoming accustomed to that event. The nurse should try to prevent this, and teach them to preserve proper respect for death and their dying fellow sufferers. The nurse who herself de-

generates into a state of flippancy in regard to suffering and death, is worse than worthless.

Every mattress should be covered with a rubber sheet. After the dismissal or death of a patient, both the bed and rubber sheet should be washed with an antiseptic solution, and they should remain in the sun for twenty-four hours before they are used again.

To fumigate a ward or room : First screen the fire-place by pasting large sheets of paper across it, also paste
 Fumigating a ward or room. paper across every large crack around the windows and doors ; empty every drawer and closet, spread the infected cloths and bedding around on separate pegs, and rip open and spread apart all cushions. (It is by far the best plan to burn the mattresses after contagious diseases.) Take a large tin foot tub, or a coal-scuttle and pour in it about two inches of water; in it also lay a brick, place the tub in the middle of the room ; then take a sauce-pan that does not leak and in it put one and one half pounds of rolled sulphur,* pour over this about one fluid ounce of alcohol, place the sauce-pan in the water on the brick, and light with a match ; leave the room and stuff the crack beneath the door with a piece of an old sheet. After twenty-four hours the room will be thoroughly fumigated. In case of infectious diseases, this treatment should be repeated ; two thirds of the quantity of sulphur used first will be sufficient. This should be also left twenty-four hours. The wood-work should then be scraped, the paper taken off the walls, the ceiling white-washed, and the furniture re-upholstered.

* R —Rolled sulphur—1½ pounds—will fumigate 1,000 cubic feet of air, the amount contained in a room of about 9x11 feet.

CHAPTER IV.

BATHS—ENEMATA—COUNTER-IRRITANTS.

THE bath is a very important curative agent in the treatment of disease. The success of it, however, depends largely upon the manner in which it is given—that duty usually devolving upon the nurse. Great care should be taken by her to protect the patient from cold, not only while in the bath but after it, or the beneficial effects will be lost. Bathing will cause changes in the condition of the skin, temperature, pulse, respiration and excretions; wakefulness or drowsiness may be the result, the bath having a stimulating or soothing effect according to the kind given. All of these things should be carefully noted in her report to the doctor.

The temperature of the water should always be tested by a thermometer, and not by the touch, which cannot be absolutely correct. If the patient has weak lungs or is debilitated, it is much the safer plan to give the bath in bed; but if he goes to the bath he should be carefully watched, the lungs covered if weak, and not immersed beneath the water, nor should he be allowed to remain over fifteen minutes in the bath.

In giving an ordinary bath in bed, wait an hour or more after eating, spread out before the heater a complete change of linen if required; then by the bedside of the patient place in readiness the wash-bowl, slop-jar, one pitcher of hot water, another of cold water,

Changes
produced.

Tempera-
ture of wa-
ter.

Giving an
ordinary
bath in bed.

soap, sponge, towels, etc.; carefully exclude all draughts from the room—if in a ward double screen the bed and close the near windows and doors—having the temperature of the room about 70°. Now place a blanket under the patient to protect the bed, another on top, removing the bed-clothes from under it, and placing them over a chair at the foot of the bed; if a thermometer cannot be obtained, pour hot and cold water into the wash-bowl until it feels a trifle warmer than the air, adding about one fluid ounce of alcohol; always test it if possible and keep it at an even temperature during the bath, changing the water when necessary. First wash the patient's face, ears, and neck, and if the hair is short, wash the head also; dry thoroughly with a soft towel. (A cloth is preferable to a sponge for washing because more manageable.) Next wash the arms and dry them, then the trunk, legs, and lastly the feet; the trunk and legs should be bathed under cover; if the patient is too weak to move easily, twice turning will be sufficient, and should be done in this wise: After washing the face turn him on one side, then bathe from the median line from the shoulder to the feet; change the water and turn him on the other side, and repeat in the same manner. After finishing the bath, take a dry (and if he is not too weak) rough towel, and quickly rub the limbs in an upward direction from the feet to the hips, and from the fingers to the shoulders; or the hand may be used if warm and dry; this starts up a superficial circulation and prevents his catching cold.

If he is weak, place a heated blanket over him after the bath and rubbing, and let him rest a little while before changing the bed, which should be done in this manner: Place the hands under his shoulders lifting them over to one side of the bed, then under his hips moving them in the same way; turn him on

Changing
the bed-
clothes.

his side towards the nearest edge of the bed ; push up next to him the blankets and sheets on which he is lying, rolling them as tightly as possible ; put the arm which is uppermost into the sleeve of the freshly warmed slip (which for bed patients should be open all the way down the front), then open, and gather in both hands the fresh under-sheet, all but enough to tuck firmly under the mattress at the side the nurse is on. (A partly clean sheet should not be used for the patient to lie on, as it will be wrinkled, and wrinkles should be carefully avoided.) Then take the draw-sheet, open and gather in the same manner, except that this time the nurse keeps all the sheet on her side leaving only enough to tuck in at the other ; it is important to make the roll as small as possible over which the patient must move. Then turn him gently on his back and in the manner before described lift him over to the other side and turn him ; the soiled linen can now be drawn quickly out ; next the remaining sleeve may be put on and the slip fastened ; draw the fresh sheets across the bed and fasten them smoothly and tightly, either by tucking well under the mattress, or by pinning them down with safety-pins. Now the fresh top-sheet may be placed over him and the blanket which has remained on him until now can be drawn out. Spread the remainder of the covers on the bed, tucking them in at the foot firmly and smoothly, but not too tightly ; room should be allowed for the patient's feet to rest in an upright position. The nurse who works quickly and deftly should complete a bath in thirty minutes from the time she begins until the last thing is laid away. When the patient's hair is long it should be braided in two plaits, and if combed carefully every day will never become matted, even in a very long illness.

The patient's spine, shoulder-blades, hips, elbows, and

Pulv. Borax - - - - - 3ii

Ol. Ricini Q. S.

F. The consistency of cream.

Sig :—

Apply night and morning after bathing the parts.

DEGREES OF TEMPERATURE FOR BATHS.

Hot bath.—From 98° to 112°, sometimes to 115°. The hot bath is stimulating in effect ; the nurse however must watch carefully for sudden weakness, or syncope, which is liable at times to occur. In that case the patient should be removed at once from the bath and made to lie in a prone position for a time. In giving a hot bath the water should first be at 98° or 100°, and the temperature slowly increased, the patient not remaining in it longer than twenty minutes.

The nurse should bear in mind the danger from draughts or cold to her patient, and should protect him well in going to and from all baths. After a hot bath, he should lie in bed an hour or more ; the best time for giving a hot bath is at bed-time, if he is able to be about his room.

Warm bath.—From 82° to 98°; the warm bath is a relaxant.

Tepid bath.—From 85° to 92° ; this temperature is used for ordinary and for most medicated baths.

Cool bath.—From 60° to 75° ; is used for the reduction of temperature.

Cold bath.—From 50° to 65° ; is used in cases of apoplexy and sun-stroke, as are also the cold wet pack and the ice pack.

Vapor bath.—In hospitals a regular made apparatus is provided for giving this bath, but in private and district work the nurse may improvise the apparatus, which should be done in this way :

Two or three hoops from barrels, a bandage or piece of strong twine, a tin sauce-pan, a pitcher of hot water, an alcohol lamp or candle in a candle-stick,

Articles re-
quired.

a rubber sheet, one half dozen blankets or coverlets, towels, three or four bricks, one chair, a flat board.

Place under the patient (on top of the under-sheet) the rubber sheet and a blanket, lay another blanket over him, drawing out all the covers from under it and removing them from the bed. Divest him of all clothing and tuck the blanket well around him from neck to heels. Now open the hoops, and with the string or bandage fasten the ends of them firmly to the sides of the bed, forming arches over the patient, one a little above the waist line, the other two below ; spread the blankets over the hoops so as entirely to exclude the air, tucking them under the mattress at the sides and snugly around the patient's neck, leaving his arms inside. If the bed is a cot or a single bed without a solid foot-board, the process may be concluded in the following manner : The blanket which is drawn from the patient (after completing the canopy above him) may be allowed to fall to the floor at the foot of the bed, tucking it well under the mattress, so that the steam will go into the bed instead of under it. The board is then inserted beneath the mattress just far enough to obtain a secure equilibrium ; the candle or alcohol lamp is placed on the board about the middle, surrounded with the bricks, standing on end ; on them is then placed the tin of hot water. The chair is then placed with its back to the board, and a blanket thrown over the whole—extending to the floor, thus excluding the air ; when the water boils the steam bath begins ; the length of time the patient remains in it depends upon the order of the physician. If the bed has a foot-board, the board must be inserted at the side of the bed, at the lower end. The temperature, pulse, and respiration should be taken at intervals during the bath, also the state of the skin and any signs of debility should be noticed particularly.

Hot or cold drinks are sometimes ordered to induce perspiration. When it is time to remove the patient from the bath, the nurse should first take a warmed blanket, and reaching under, tuck it firmly about him Removing patient from vapor bath. from neck to heels as in the beginning, and quickly remove all the paraphernalia; another blanket should be placed over him and he should be left so for about twenty minutes to induce further perspiration; he should next be covered with a freshly warmed blanket, all the damp ones and the rubber sheet removed, and the skin should be thoroughly dried under cover with a soft towel, and a fresh slip should be put on him; he is now left to rest until bed-time or the next morning, as the doctor orders, when the sheets and usual covers may be replaced. *A hot air bath* is given in the same manner, minus the tin of water.

For a hot pack prepare one half dozen blankets, a bucket of boiling water, and also one half dozen jars, bags, or cans filled with boiling water. Prepare patient as for steam bath, then wring out of the Hot and cold wet packs. hot water a blanket and lay it over him, quickly drawing the dry blanket from under the hot wet one, and putting it on top; reach under, and tuck the hot wet one thoroughly around and under his body, except the feet; place the hot cans next the blanket, one at the feet and the rest at the sides, being careful sufficiently to protect the skin so as not to burn it; now cover the patient with one or two blankets and let him remain so for about twenty minutes. To remove from bath proceed as in vapor bath.

For a cold pack prepare patient as before; place under the posts at the head of the bed blocks or books raising it about two inches; raise the rubber sheet at each side of the bed by placing a rolled sheet under it, thus forming a gutter down

the middle ; set a bucket at the foot of the bed to catch the water ; wring the blanket from water about 75° and keep wetting it with water to the degree directed, continuing for about fifteen minutes. Proceed as before in removing from pack.

In an ice-pack proceed as in a cold pack, but instead of pouring water over the blanket pack ice around the patient and continue as long as ordered. In sun-stroke the ice is sometimes packed next the patient's skin.

In half-baths, leg, arm, hip, foot, and spine baths, the nurse must be particular to protect the patient from draughts and cold. The leg, arm, and spine bath, may be given by wringing flannel from hot, salt or medicated water, as the doctor may order, enveloping the part in it, and then covering with a dry blanket and leaving for about twenty minutes, after which the part should be bathed with tepid water in which is some alcohol, and gently rubbed with the hand or a soft towel in an upward direction until dry. A foot-bath should begin at a temperature of 85° and be gradually increased. Mustard, soda, and salt are sometimes ordered to be used in the foot-bath, which may be given in bed, by placing a foot-bath tub on a stool at the foot or side of the bed, and moving the patient so that the feet may hang over into the water ; care should be taken to cover the knees and the legs carefully from the air.

For skin affections and blood diseases medicated baths are sometimes given. These consist of mercurial, alkaline, acid, sulphur, and soda baths, etc. Vegetable decoctions are also used in some cases. For mercurial or acid baths a porcelain or stone vessel must be used, as a chemical, corrosive action takes place between the drugs and metal vessels.

Although the service of a professional manipulator is usually obtained to administer the massage treatment, a nurse is often called upon to rub her patient, and a few points might be mentioned here that will help her to perform that duty in an intelligent manner. Often the muscles of the legs, arms, and back will ache cruelly from inaction, particularly in surgical cases, where there exists but little weakness and no considerable break-down of general tissue ; also in convalescence from acute diseases, when the wasted tissue is building up, there is great pain often experienced in the muscles of the arms and legs ; these are aches very difficult to bear, and a little systematic and patient rubbing will relieve them by producing a good superficial circulation. The nurse may at any time use a little hot salt water to bathe the limbs and then rub gently and firmly with the palm of the hand in an upward direction. The back should be rubbed from the sides toward the spine. The abdomen should be rubbed in the direction of the colon ; which is divided into the right ascending, the arch or transverse, and the left descending portions ; so she should rub *up the right side, transversely across, and down the left side* of the abdomen. It might be well here to give an extract from Dr. Weir Mitchel's book, "Fat and Blood and How to Make Them," which briefly explains the whole process of rubbing :

Rubbing.

Rubbing
limbs, back,
abdomen.

Dr. Weir
Mitchel's
directions
for rubbing.

An hour is chosen midway between two meals, and the patient lying in bed, the manipulator starts at the feet and gently but firmly pinches up the skin, rolling it tightly between the fingers and going carefully over the whole foot ; then the toes are bent and moved in every direction, and next with the thumbs and fingers the little muscles of the foot are kneaded and pinched more largely, and the interosseous groups worked at with the finger tips between the bones. At last the whole tissues of the

foot are seized with both hands and somewhat firmly rolled about. Next the ankles are dealt with in like fashion, all the crevices between the articulatory bones being sought out and kneaded, while the joint is put into every possible position. The leg is next treated, first by surface pinching, then by deeper grasping of the areolar tissue, and last by industrious and deeper pinching of the large muscular masses, which for this purpose are put in a position of the utmost relaxation. The grasp of the muscles is momentary and for the large muscles of the calf and thigh both hands act, the one contracting and the other loosening the grip. In treating the firm muscles in front of the leg the fingers are made to roll the muscle under the cushions of the finger tips. At brief intervals the manipulator seizes the limb in both hands and lightly runs the grasp upward, so as to favor the flow of the venous blood currents, and then returns to the kneading of the muscles.

The same process is carried on in every part of the body, and especial care is given to the muscles of the loins and spine, while usually the face is not touched.

The belly is first treated by pinching the skin, then by deeply grasping and rolling the muscular walls in the hands, and at last the whole belly is kneaded with the heel of the hand in a succession of rapid deep movements, passing around in the direction of the colon.

It depends very much on the strength, endurance, and practice of the manipulator how much good is done by the maneuvers. At first or for a few sittings, they are to be very gentle, but by degrees they may be made more rough, without hurting the patient.

The early treatment should last half an hour, and be increased by degrees to one hour, after which should follow an hour of absolute repose. After the first few days I like the rubber to keep the part constantly lubricated with vaseline or other good lubricant so as to make the skin smooth and supple. As soon as a part has been manipulated it should be at once wrapped up.

When the patient becomes used to the process, the operator is sometimes directed to strike the muscular masses with the soft cushion formed by the muscles on the ulnar side of the closed hand or with the same part kept in rigid extension. The blow, if given adroitly, causes a momentary contraction of the muscles thus struck.

The daily massage is kept up through at least six weeks, and

then if everything seems to be going on well I direct the rubber to spend half an hour in exercising the limbs, after the Swedish plan, by making movements of flexion and extension, which the patient is taught to resist. At the seventh week the treatment is used on alternate days, and is commonly laid aside when the patient gets up and begins to move about.

The nurse should in every case feel herself responsible for the state of her patient's bowels, she should carefully note in her report the frequency, the size, the color, and consistency of the stools. In hospital work she should keep a note-book, in which to make the daily record of the condition of each of her patients and to which she may refer at any time. If the doctor fails to notice in her report the state of constipation or relaxation, as the case may be, she should mention the fact to him verbally once, and then say no more; after that, the responsibility rests with him; if he still orders nothing, it is probable that the existing state of affairs is what he desires.

Enemata are given for various purposes: purgative—given for constipation; nutrient—given when the food cannot be retained when taken by the mouth; sedative—given for relief of pelvic pain and to produce sleep; astringent—given to check diarrhœa; refrigerant—given to reduce fever, consisting of pure cold water; emollient—given to sooth an irritable condition of the mucous membrane of the intestine.

In giving an injection the nurse should first prepare all that is necessary before disturbing the patient: a small piece of rubber sheeting and the bed-pan placed near the heater, a tin basin, a pitcher of warm water, a piece of Castile soap, the syringe, cosmoline.

Pour a quart of water into the basin and make a strong suds with the Castile soap; squeeze the syringe three or four times in the water to expel all the air; place the warmed rubber sheet under the

Enemata.

Different kinds.

Method of giving an enema.

patient to protect the bed, turn him on his left side with knees flexed ; carefully grease the tube of the syringe, and with the finger feel along (under cover) until the rectum is felt, then carefully insert the tube, at first in a straight and afterward in a slightly upward direction ; if this causes pain, the tube should be at once removed and tried again ; the pain will be caused either by the presence of hemorrhoids or by the tube becoming imbedded in the bowel. The water for injecting should be about blood heat, from 98° to 100°. It is better to prepare it a little warmer than required, as it may easily be made cooler if necessary ; it should be injected very slowly, and if a cramp is caused, stop injecting until the pain has ceased, and then continue. Some patients can stand more than others, but whenever the word is given the nurse should at once cease. A small cloth should be pressed against the rectum to retain the water a moment or more ; then the patient should be turned on his back, and the bed-pan placed carefully under him. In every case where he is too ill to use the commode, it is the duty of the nurse to carefully wash and wipe the rectum after a bowel movement, and not let the patient exert himself in trying to perform that office. Sometimes there will be a small amount of turpentine or oil ordered to be given with the soap and water ; in that case, the amount ordered should be placed in about one half pint of water and injected first and more plain water and soap afterward if necessary.

In nutrient or medicinal enemata, a hard rubber syringe is best to use, holding from two to six ounces ;
Nutrient en-
emata. the enema should be heated to about 98° and injected very slowly, and a cloth pressed against the rectum for a short time to facilitate its remaining in the intestine. The hard rubber syringe should be washed with hot water immediately after using.

It is best for the nurse to have a tray covered with a white cloth on which to keep all the paraphernalia for these enemata, the syringe, an old cup or bowl in which to mix the medicines or nutrients, a tin cup in which to heat them to the required temperature, and the bottles containing the medicines used. These precautions will ensure the articles not becoming mixed with the utensils used for other purposes, besides being a much neater way of managing.

The utmost care in reporting the effects of these enemata should be observed, if they are retained, if assimilated (which can be determined by the presence or absence of food in the bowel movements); the time of the stool occurring after the giving of an injection should also be carefully recorded. In giving suppositories the same precaution should be observed as in the giving of injections; the patient placed in the same position, the suppository well oiled and inserted in the rectum well beyond the sphincter muscle, pressing a cloth to the rectum for a moment or more afterward.

Under the head of counter-irritants may be classed all remedies used for drawing pain from the deep tissues to the surface, and for relieving inflammation in all parts of the body. They consist of: hot and cold fomentations and compresses, stupes, sinapisms, cataplasms, liniments, ointments.

Anything producing warmth and redness, such as liniments, ointments, etc., is called a rubefacient.

All counter-irritants that cause blistering are called vesicants—cantharides, croton oil, etc. Turpentine and mustard come under this head when used to excess or when left on the part too long; the nurse should take care to prevent this, as they are usually ordered to be used only as rube-

Note the effects produced.

Counter-irritants.

facients. Cupping, leeching, and the actual cautery are the more severe counter-irritants.

Fomentations may be ordered either hot or cold, and have in them turpentine, laudanum, chloroform, lead water, etc., for the relief of pain, or, as a tonic, to strengthen weak tissue or to relieve inflammation. In applying fomentations have ready a bottle of turpentine, towels, and a piece of flannel of the required size, and from two to four thicknesses ; if the fomentation is to be a hot one, heat a tin wash-bowl by rinsing it with boiling water, lay the flannel in it, and cover with boiling water ; spread a fresh towel on a stand at the bedside of the patient, and lay the dripping flannel in the middle of it, quickly folding the towel over it, then seize it at both ends and twist until all the water is wrung out, spread the flannel out, and drop on it the turpentine ; fifteen drops sprinkled over will usually be sufficient, although in this as in the application of all counter-irritants, the texture and sensibility of the skin should be considered and watched ; lay the flannel over the painful spot and cover with a dry folded towel or a piece of oiled silk to keep in the warmth and moisture. Fomentations should be renewed every fifteen minutes ; a fresh one should be prepared before removing the old one. White flannel should be used, as the colors are apt to run, and the dyes are sometimes poisonous.

When the application of stupes or poultices of any kind is discontinued, place a thin layer of cotton over the part for some hours, and after that is removed bathe it with alcohol and water, which will prevent the patient from catching cold. The nurse may always try the application of dry heat to relieve pain while waiting for the doctor's orders. A water bag—with not more than one pint of water in it, so that it will

How to apply a fomentation.

Treatment on removal of poultices, etc.

not be too heavy—or flannel heated in the oven, applied to the painful spot, will often dispel some of the suffering. In using the bag care should be taken to expel the air from it after the water is in, so that it will lie flat.

Ice-caps are sometimes ordered to reduce fever. The true nurse however has very little use for them; they are apt to be heavy and smell of rubber, and are constantly slipping out of place or leaking. The nurse who has her patient's well-being and comfort uppermost in her mind will use simple compresses made of lint, two or three times doubled and as large as required; these wrung dry from ice water and changed every two or three minutes will have the desired effect in a much shorter time without the disadvantages of the rubber ice-caps. That this mode is more troublesome, will not be taken into consideration by her.

Ice-caps.

Wet compresses.

To make a flaxseed poultice.—Have ready: tin wash basin, boiling water, ground flaxseed, muslin of the required size, spatula or broad-bladed knife, oiled silk or towel, cheese-cloth for covering if required.

Never pour the water on the flaxseed but *stir the flaxseed* into the water, thus:

First heat the basin by rinsing it in boiling water, pour into the heated basin enough boiling water to make a poultice the required size, mix handfuls of flaxseed in the water, beating it lightly and quickly with the spatula or knife; then spread it on the muslin, three-fourths of an inch thick; it should be renewed every two hours. If a poultice is made properly with boiling water, it will not be necessary to cover the top of it, but lay the flaxseed next the patient's skin; it will be much more effectual and does not adhere to the skin in the least. For medical cases it is well to cover flaxseed poultices with cheese-cloth,

but for surgical cases it should never be done.

The poultice should be taken to the patient rolled in a towel ; another towel or piece of oiled silk placed over it to retain the heat. There is a variety of poultices and it is well for the nurse to familiarize herself with them all.

Bread poultice.—Made of bread crumbs with boiling water poured over them and set aside to steep for a few moments; squeeze lightly through a strainer and spread ; apply uncovered, every hour.

Charcoal poultice.—Make a flaxseed poultice, adding one halfounce of wood-charcoal, and sprinkle one drachm of dry charcoal over it ; apply without a covering. Used for sloughing wounds.

Goulard poultice.—Make a flaxseed or bread poultice; pour over it as much of the lead lotion as will be absorbed. Used for inflammation ; but should never be used when the skin is broken.

Yeast poultice.—Made of two or three fluid ounces of yeast, and two ounces of flaxseed, stirred together in a porcelain or earthen vessel.

Hop poultice.—Made as bread poultice.

Slippery-elm poultice.—Made by mixing hot water with powdered slippery-elm, to the proper consistency. Apply without a covering.

Spice poultice.—Made by putting all the powdered spices into a bag, which should then be sewed up at the end and dipped in hot whiskey, or it may be applied dry by heating it in the oven.

Sinapism mustard plaster.—Is made with one or two parts mustard, to four or five of flour, according to the strength desired ; mix the flour and mustard in lukewarm water to the consistency of a thick paste, which should be spread thinly over the half of a piece of muslin twice the size

required, the remaining half to be laid over the plaster ; cover, and after its removal treat as in the case of a poultice. The length of time it should remain on depends upon the sensibility of the patient's skin, which should always be considered.

Mustard poultice.—May be made with hot water, using one or two parts mustard to three or four parts flaxseed. A mustard plaster made of mustard, flour, and the white of an egg, and thinned to the required consistency with glycerine, makes a non-vesicant plaster, and is a good, mild, constant counter-irritant.

When a *strong* counter-irritant is required, the doctor usually orders a preparation of cantharides (Spanish fly) which may be in the form of a plaster, collodion, or a salve; great care is required in the manner in which it is applied, watched, and attended to after vesication ; if the doctor wants the cantharidal application to merely redden the skin, and not vesicate, he will say so, and then the nurse must watch and remove it at the proper time ; but in general it is meant to blister, and in that case it usually requires from six to eight hours.

The nurse should be particular to ascertain from the doctor the exact size of the blister and the spot on which it is to be placed ; the part should be ^{Applying a blister.} washed with warm water and Castile soap before applying. If the cantharidal collodion is ordered, great care should be taken to paint the part *within* the prescribed limit, and that drops do not fall elsewhere on the skin. If the cantharidal salve is ordered, spread it on lint, in this case as in the blister plaster, round the corners and lay it on the affected part ; then take a piece of absorbent cotton a little larger than the size of the blister, and lay it lightly over the plaster, which will soak up the serum if the blister should break, then place two strips of adhesive plaster transversely across

the cotton and fasten it on the skin considerably beyond the blister, but not tight enough to press the cotton down; enough room must be left to allow the blister to rise. If in the course of four or five hours the skin shows no signs of vesication, a hot poultice or dressing of cosmoline will hasten matters. On the other hand, if within a shorter time than expected the skin vesicates, the plaster should be removed and the blister dressed. Some skins are much more sensitive than others and the blister should be carefully watched. If the patient should complain of pain in the bladder or if there be retention of urine, it should be at once reported, as cantharides often cause strangury. Doctors sometimes prefer the serum in the blister to be gradually absorbed, but when it is to be removed prick the lower end of the blister and catch the serum in absorbent cotton or soft cloth, taking care not to let it run over the skin. The dressing ordered is usually zinc ointment, but whatever it may be, it should be renewed night and morning for three or four days, the part gently washed with Castile soap and warm water before applying the fresh dressing, rubbing the skin around the whole circumference of it toward the blister.

When croton oil is ordered it should be applied to the part with the fingers, and be well rubbed in, then covered with a thin layer of oiled silk, cotton, lint, or soft linen; the hands should be washed immediately after applying the oil.

When iodine is applied three or four coats may be painted over the surface the first or second time, but after that the part becomes sensitive, and care should be taken to paint it very lightly, and sometimes let a day intervene in order to give the skin time to recover; if it causes pain or burning a little olive oil spread over the part will re-

lieve it. In applying iodine the nurse should have a separate brush for each patient, and should never dip it into the bottle, but have a tiny saucer or galley cup in which to pour out as much as she will need ; the cup and brush should always be washed immediately after using.

Liniments and ointments should always be applied with the hand; if applied with cotton or a cloth the good effect obtained from the friction would be lost.

Liniments
and oint-
ments.

In hospitals the nurse is rarely called upon to apply leeches, but in private and district nursing she may be expected to, and should know how to manage them. They should not be used more than once ; it is possible to disgorge them by sprinkling salt upon them and changing the water frequently, but it is almost impossible to render them quite pure again ; and unless they are very difficult to obtain, they should be thrown away after the first application. When not required for immediate use they should be kept in a glass jar covered with a tin or leather top, perforated with tiny holes, for it is surprising through what a small aperture the little squirmers can squeeze ; so the nurse should be particular to secure them well, for they are likely to find their way into beds and under sofa cushions, and are not pleasant to the touch.

Leeches.

The water in which they live should be changed every four or five days. It is well to put a little charcoal in the jar for purifying purposes. The part to which they are to be applied should be well washed with warm water and thoroughly dried. There is usually no trouble in getting them to bite. The leech should not be touched with the hand but picked up with a corner of a towel, and the head laid on the part to which it is expected to adhere. If it does not bite, the nurse may pick it

Manner of
applying
leeches.

up again and slip it into the water ; then with a needle prick her own finger and smear a tiny drop of blood over the part and try again ; this will generally persuade it to go to work ; six or eight are usually ordered to be applied at once, and as soon as they are gorged they drop off of their own accord. (They hold from one to two drachms.) When the required amount of blood has been drawn, the bleeding is usually stopped by washing the part with hot water and laying a small compress of cotton over each puncture. But if five or six ounces are ordered to be drawn, then the bleeding may be facilitated by bathing the part with *lukewarm* water or by applying a flaxseed poultice. On the other hand, if the bleeding continues after the required amount has been drawn, the nurse may tightly bandage the part for a short time, laying compresses wrung from *hot* water over each puncture. If she is not successful then, the doctor should be sent for. Pressing a finger over each puncture will be all that is necessary until he comes. The nurse should never on her own responsibility use Monsel's solution or any other medicinal styptic.

At the present day bleeding is rarely resorted to, but sometimes in case of paralysis or apoplexy the nurse may be called upon to assist the doctor in that operation. She should prepare for his use : two basins, one to catch the blood and one for the scalpels, a bottle of 1-20 carbolic acid, bandages to tie above and below the elbow, ice, absorbent cotton, scissors, towels, etc.

After bleeding it is not usual to dress the vein with anything, but to lay on a compress of cotton, wet with 1-40 carbolic acid, and loosely bandage the elbow.

Dry cupping. In hospitals cupping is made easy by the use of regular made cups with a bulb handle, or those from which the air is exhausted by means of a pump.

When the cups are applied successfully the tissue is drawn up in them an inch or an inch and a half, and from five to fifteen minutes will cause sufficient ecchymosis. But again, in private and district work, the nurse must often improvise her apparatus; tumblers or wineglasses will serve the purpose; then to complete the arrangements, it is necessary to have a bottle of alcohol, a lamp or candle, matches, a basin of hot water, and towels. Immerse the glasses in hot water and dry them thoroughly, then put into one of them a few drops of alcohol, wet the edge of the glass by running a wet finger around it, and quickly set fire to the alcohol, pressing the glass firmly on the part to be cupped. The water on the edge of the glass prevents the fire from reaching the skin. There is no danger of burning the patient if this method is properly and deftly followed, but it must be quickly done and care taken to avoid getting so much alcohol in the glass, that it will run down the sides, or so little that it will evaporate before it is set on fire.

One form of cupping is done with a scarificator, which is a square steel instrument about half the size of a coffee cup, in which are from twelve to sixteen lances, which by means of a spring are all at one time forced down on the part to be cupped; this is called wet cupping. Sometimes the part is frozen before the instrument is applied, and the nurse should have a piece of ice in readiness. As soon as the scarificator is removed dry cups are at once applied and the required amount of blood drawn by this means. The nurse should be ready with the dry cup to hand to the doctor when he requires it, and a basin to receive the scarificator; when the dry cups are to be removed, the basin should be held close to the wound to catch them as soon as they are

ready. One or two poultices are usually ordered after the wet cupping, and after that treatment the usual blister dressing is applied.

A mild form of cauterization is nitrate of silver, generally used to start up granulation; it is used both
 Cautey. in the stick and in solutions of various strengths. The actual cautery is applied by means of an iron, resembling a poker, the end of which is heated to a white heat and applied to the affected part. Sometimes the skin is merely touched in spots superficially, again it may be drawn superficially down the spine, not penetrating into the deep fascia, again it may be held on one spot until the deep fascia is reached. It is used in nervous diseases, delirium tremens, and for the bites of poisonous animals. The cautery is often attached to the battery, and the "Paquelin cautery"—an invention of a Frenchman—is also used.

In cases of great debility, resulting from loss of blood by hemorrhage, blood is sometimes transfused from
 Transfusion of blood and medicine. the veins of a healthy subject into those of a debilitated one. In some diseases medicine is transfused into the veins by means of a large needle attached to the tube of a fountain syringe, containing the medicine. A pint of salt water—used twice daily—at a temperature a little above blood heat, has been known to be transfused into the veins of a patient suffering from pneumonia.

CHAPTER V.

BONES—JOINTS—SKIN—MUSCLES—LYMPHATICS—NERVES.

BONES form the frame-work or skeleton of the body and are composed of two substances, animal and mineral. The animal matter predominates in youth, giving place to the mineral substance in advanced age ; consequently the bones of aged people are brittle, whereas in youth they are quite pliable. The two substances can be separated from each other. If a bone is placed in a dilute muriatic acid, after a time the mineral portion will unite with the acid, leaving the animal portion which will retain its shape and will be so flexible that it may be tied into a knot. By subjecting the bone to the action of heat the mineral portion remains ; the nurse exemplifies this to a certain extent when she makes a soup stock.

The bones are united by ligaments of various strengths and are moved by muscles ; the ends of the bones are tipped with cartilage, which is also found in the body wherever firmness and tenacity are needed without hardness ; as the outer ear, lower part of nose, eyelids, etc.

There are 200 distinct bones in the skeleton : the spine, sacrum and coccyx included, 26 ; cranium, 8 ; face, 14 ; os hyoid, sternum, and ribs, 26 ; upper extremities, 64 ; lower extremities, 62.

They are divided into long bones, as of arm and leg ; short bones, as of fingers and toes ; flat bones, as of the skull ; irregular bones, as of the spine.

They are composed of two structures, cellular and solid. In the bones of the skull the cellular portion lies between two thin plates of solid bone ; in the long bones the cellular part is at both ends covered with the solid bone, while the shaft is a hollow tube with the bone greatly condensed. Long bones have a head, shaft, and extremity. Periosteum is the white fibrous membrane which covers the bones. The lining membrane is called the internal periosteum, or marrow.

For study, the skeleton may be divided into
Divisions of the skeleton. head, trunk, and extremities.

The head or skull contains twenty-two bones, eight in the cranium and thirteen in the face.

The bones of the cranium consist of :

One frontal, which is situated at the anterior portion of the
Bones of the cranium. cranium and forms the forehead. The horizontal portion of the frontal bone forms the nose and the roof of the orbits of the eyes.

Two parietal (a wall) bones which form by their union the sides and roof of the cranium.

One occipital, placed at the posterior and inferior portion of the cranium, forming the base of the skull.

One sphenoid (a wedge) which is situated at the anterior portion of the base of the skull. It articulates with all the other cranial bones, which it binds firmly and strongly together.

Two temporal (*tempus*, time) bones which are situated at the sides and base of the skull.

One ethmoid (a sieve) bone, a light spongy bone situated between the two orbits at the root of the nose.

The bones of the cranium and face are joined to each other by means of seam-like articulations called Sutures.
sutures ; the following are the three most important ones :

Sagittal (inner parietal), formed by the union of the two parietal bones.

Lambdoid (occipito-parietal), by the union of the occipital bone with the parietal bones.

Coronal suture (frontal parietal), by the union of the frontal with the parietal bones.

There are three cavities in the skeleton for the reception of the various organs ; namely, cranium, thorax, and pelvis ; the cranial cavity, for the brain ; the thoracic cavity for the organs of respiration and circulation ; the pelvic cavity, for the principal organs of digestion and generation. All these cavities are connected with the spine.

To express "up," "back," "front," and "side," the following terms are generally used : anterior, front ; posterior, behind ; superior, above ; inferior, below ; lateral, side.

The bones of the face are two nasal, two palate, two inferior turbinated, two molar, two lachrymal, one Bones of the face.
vomer, two superior and one inferior maxillary.

The nasal bones are small and oblong, placed side by side at the middle and upper part of the face, and form by their union the bridge of the nose.

The superior maxillary bone is next to the largest of the face. By union with its fellow it forms the upper jaw, and holds the upper teeth.

The lachrymal bones are the smallest and most fragile in the face. They lie in front of the inner wall of the orbit. They are often called the *ossa unguis* because of their resemblance to a finger nail.

The malar, or cheek bones, are situated at the upper and

outer part of the face. They form the prominence of the cheek.

The palate bones are situated at the back part of the nasal fossæ. They are wedged in between the superior maxillary and part of the sphenoid. Each one assists in the formation of three cavities, viz.: the floor and outer wall of the nose; the roof of the mouth; and the floor of the orbits.

The inferior turbinated bones are on either side of the outer wall of the nasal fossæ. Each is a layer of thin spongy bone, curled like a scroll, hence its name—turbinated.

The vomer is situated vertically at the back part of the nasal fossæ and forms part of the septum of the nose.

The inferior maxillary bone is the largest and strongest in the face; it forms the lower jaw and serves for the reception of the lower teeth.

The hyoid bone is also called the lingual bone because it supports the tongue and gives attachment to its muscles.

The thorax is a cage formed of bone and cartilage, containing and protecting the principal organs of respiration and circulation; it is formed by the sternum and the costal cartilages in front, the twelve ribs on each side, and the scapula and dorsal vertebræ behind.

The sternum, or breast-bone, is a flat, narrow bone situated in the median line in front of the chest and consists in the adult of three portions. It has been likened to an ancient sword, the upper piece representing the handle, and called the manubrium; the middle piece representing the blade, called the gladiolus; and the end representing the point, called the ensiform appendage.

The ribs are elastic arches of bone which form the chief portion of the thoracic, or chest, wall. There are twelve on each side. The first seven are attached behind to the spine and in front to the sternum; these

are called true ribs. The remaining five are called false ribs; three of which are connected behind with the spine and in front with the costal cartilages; the last two are connected with the spine alone, and have a free edge anteriorly; these are called floating ribs. The ribs are placed more or less obliquely so that the front end is lower than the back; the spaces between them are called intercostal spaces. The ribs increase in length from the first to the seventh, and then diminish again to the twelfth; in breadth they increase from above downward.

The costal cartilages are white and elastic; they serve to extend the ribs to the front of the chest and contribute to the elasticity of its walls. Cartilages.

The spine is a flexible column formed of a series of irregular bones called vertebræ, twenty-six in number, counting the sacrum and coccyx each one; The spine.
thirty-three counting the sacrum five and the coccyx four, as they exist in childhood.

Commencing at the base of the skull, the first seven vertebræ are called the cervical region, the next twelve the dorsal region, the remaining five the lumbar region. Next comes the sacrum, and lastly the coccyx, the segments of which in the adult are firmly united to form but two bones.

The first cervical vertebra is called the atlas, because it supports the head; the second is called the axis. The atlas and axis admit of the nodding and rotating movements of the head. The seventh cervical vertebra is called the *vertebra prominens*, which in almost any subject can be both seen and felt.

The cervical vertebræ are the smallest bones, the dorsal the next in size, and the lumbar are the largest.

The sacrum is situated at the lower part of the vertebral column and at the upper and back part of the pelvic cavity

between the two *ossa innominata*. In childhood it consists of five separate bones, in the adult, of one.

The coccyx (cuckoo shape), so called from looking like a cuckoo beak, in childhood is composed of four segments of bone ; in the adult it consists of one bone converging almost to a point, and may be considered a rudimentary tail.

The upper extremity consists of the arm, forearm, and hand ; it is connected with the trunk by means of the shoulder, which consists of two bones, the clavicle and the scapula.

The clavicle (*clavis*, a key), or collar bone, forms the anterior part of the shoulder. It is a long bone, shaped like the italic letter *f*, and situated horizontally at the upper and anterior part of the thorax, immediately above the first rib. It articulates with the sternum and scapula.

The scapula (derived from a Greek word meaning a spade), forms the posterior portion of the shoulder. It is a large, flat, triangular bone, situated at the posterior side of the thorax between the first and eighth ribs. It articulates with the humerus and the clavicle.

The humerus is the longest and largest bone in the upper extremity ; the upper and largest end of it is called the head. It is the only bone in the arm.

The forearm is situated between the elbow and wrist and is composed of two bones, the ulna and radius. The ulna, so called because it forms the elbow, is a long bone and lies at the inner side of the forearm, parallel with the radius. It is the larger and longer of the two bones. The upper extremity of the ulna forms the greater part of the elbow joint. There are two processes on the head of the ulna, called the *olecranon* (elbowhead) and *coronoid* (crow's beak) processes. The olecranon process is the most common seat of fracture. It resembles the patella in the leg and is

sometimes a separate bone. The radius is situated at the other side of the forearm ; the upper end is small and forms a small portion of the elbow joint ; the lower end is large and forms the chief part of the wrist.

The skeleton of the hand is divided into three sets of bones : the carpus, or wrist ; the metacarpus, or bones of the hand ; the phalanges, or bones of the fingers.

The bones of the carpus are eight in number, arranged in two rows ; the upper row from radial to ulnar side are the scaphoid, semilunar, cuneiform, pisiform ; the lower row (in the same order) are trapezium, trapezoid, os magnum, unciform. The metacarpal bones are five ; they are long, with a shaft and two extremities. The phalanges are also long bones, three in each finger and two in each thumb.

The lower extremity consists of three portions, the thigh, leg, and foot ; it is connected with the trunk by the *os innominatum*, or nameless bone, so called Lower extremity. because it bears no resemblance to any known object. This is a large irregular bone, and forms with its fellow the sides and anterior wall of the pelvic cavity. It is divided into three portions : the ilium, ischium, and pubes. The ilium forms the prominence of the hip ; the ischium the inferior and strongest portion of the bone ; the pubes forms the front of the pelvic cavity.

The pelvis is the largest of the three bony cavities, that are joined to the spine ; it is so called from its The pelvis. resemblance to a basin and is a large bony ring between the lower end of the spine, which it supports, and the lower extremities, on which it rests. The pelvis is composed of four bones, the two *ossa innominata*, which bound it on either side and in front ; and the sacrum and coccyx which complete it behind.

The leg consists of three bones, the femur, tibia, and fibula.

The femur, or thigh bone, is the longest and largest bone in the skeleton. The tibia is next in size, and The leg. lies at the front and inner part of the leg; the upper extremity of the tibia is large and articulates with the femur. The fibula lies at the outer side of the leg; it is the smaller of the two bones, and in proportion to its length is the thinnest of all the long bones. Its upper extremity is small and articulates with the tibia; the lower extremity forms the outer ankle.

The patella or knee-cap, the largest sesamoid bone, is a flat triangular one forming the anterior portion of the knee joint. The knee-cap.

The skeleton of the foot is divided into three portions, tarsus, metatarsus, and phalanges. Bones of The foot. tarsus are seven: calcaneum, or os calcis, astragalus, cuboid, scaphoid, and the internal, middle, and external cuneiform. The metatarsal consists of five long bones; the phalanges, of fourteen, two in each great toe and three in each of the others.

The bones which form the skeleton are united at different points; these points of union are called The joints. joints or articulations. Where little movement is required, the joint is made up of firm, tough, and elastic fibrous cartilages; but in the movable joints there are five different structures: bone, cartilage, fibro-cartilage, ligament, and synovial membrane. The latter secretes the synovial fluid to lubricate the joint. When this dries up the joint is said to be ankylosed; this condition causes great difficulty of motion, and the fibrous parts around the joint become stiff and thickened. Ankylosis may be either partial or complete.

Joints are divided into three classes: movable (diarthrosis), immovable (synarthrosis), mixed (amphiarthrosis).

Among the movable joints are : the hip and shoulder, called the ball and socket joints ; the elbow and ankle, called hinge joints ; the atlas and axis in the vertebræ, capable of the nodding and rotary movements of the head.

Among the immovable joints are the sutures and the teeth.

Among the mixed joints are included the inter-vertebral, and sacro-iliac.

The human subject is provided with two sets of teeth, which make their appearance at different periods of life. The first appear in childhood, and are called temporary, or milk, teeth ; the second set appear also in childhood but remain until old age ; these are called permanent teeth. The temporary teeth are twenty ; four incisors, two canines, and four molars in each jaw. The teeth.

The sockets in which the teeth are fastened are called the alveoli. Each tooth contains three portions : the crown, or body, projecting above the gum ; the root, or fang, entirely concealed within the alveolus ; the neck, the constricted portion between the other two.

In the permanent set there are thirty-two teeth ; four incisors, two canines, four bicuspid, and six molars in each jaw. The incisors are so called from their having a sharp edge adapted for cutting the food. The canine teeth (cuspidati) are larger and stronger than the incisors. The bicuspid teeth (small or false molars) are smaller and shorter than the canine teeth. The molars (large or true molars) are the largest teeth, and from the great depth of their crowns are adapted for grinding and pounding the food.

The skin is the principal seat of the sense of touch and is a covering for the protection of the deeper tissue ; and is also an

important excretory and absorbing organ. It consists of two layers : the derma, or cutis (true skin), and the epidermis, or cuticle (scarf skin). The derma is tough, flexible, and elastic in order to protect the inner part from violence ; it consists of fibro-areolar tissue, mixed with numerous bloodvessels, lymphatics, and nerves. The epidermis forms a defensive covering to the true skin and varies in thickness in different parts ; where it is exposed to pressure it is thick and hard. The black skin of the negro and the tawny skin of other races are due to the presence of coloring matter, called pigment, in the cells of the cuticle.

The appendages of the skin are : nails, hairs, sebaceous glands and their ducts, and sudoriferous glands.

The nails are flattened elastic structures of a horny nature, placed upon the dorsal (back) surface of the terminal phalanges of the fingers and toes ; each nail is convex on the outer surface and concave within. The part by which it is implanted is called the root ; the exposed portion, the body ; the anterior extremity, the free edge ; and the part of the cutis beneath the body and root of the nail is called the matrix, because it is the part from which the nail is produced.

The hairs are found in nearly all parts of the body, except in the palms of the hands and in the soles of the feet ; they vary in length, thickness, and color, in different parts of the body. A hair consists of the root, or the part implanted in the skin, the shaft, or the portion projecting from the surface of the skin, and the point.

The sebaceous glands are found in almost all parts of the skin and secrete an oily matter ; they are most numerous in the scalp and face and are wanting in the soles of the feet and in the palms of the hands.

The sudoriferous, or sweat glands, are the organs by which a large portion of the aqueous and gaseous materials are excreted ; they are most numerous in the soles and palms, axillas, etc.

The epithelium is a thin layer of cutis, covering parts not covered by the former cuticle ; as the lips, nipples, mucous membrane, etc.

The principal tissues in the body are : cellular, or areolar, tissue ; adipose, or fatty, tissue ; muscular tissue ; nervous tissue.

The three principal membranes of the body are : mucous membrane, serous membrane, and synovial membrane.

Muscles are bundles of reddish fibre ; the muscular substance in animals is generally termed lean meat.

Muscles.

Tendons and aponeurosis are white glistening fibrous cords attached to the muscles and bones ; they serve as cords to help the muscles move the bones and other parts of the body. The term " fascia " is used for the layers of the different tissues ; the fasciæ are divided into two classes, superficial and deep fasciæ.

There are but few muscles with which it is necessary for the nurse to familiarize herself. Those that lie along the side of the arteries, usually bearing the same name as the artery, together with the few that will be described here, are all that will be useful to her. If the doctor should order an application for a certain muscle, she should know at once where to apply the treatment ; she will find the knowledge useful in massage also.

The sternocleidomastoid muscle is large, thick, and broad, passing obliquely across the sides of the neck. It rises by two heads from the sternum and clavicle, and is often called the surgical mark of the neck, as the anterior edge of the muscle forms a prominent ridge beneath the skin, and

serves as a guide to the surgeon for making incision for the common carotid artery.

The diaphragm (from a Greek word meaning a partition) is a thin, fan-shaped muscular septum, placed obliquely at the juncture of the upper and middle third of the trunk, separating the thorax from the abdomen. It forms the floor of the chest and the roof of the abdomen; it is attached in front to the end of the sternum, on either side to the ribs, and at the back to the lumbar vertebræ.

The deltoid muscle forms the convexity of the shoulder.

The biceps muscle occupies the whole of the anterior surface of the arm.

The triceps muscle lies on the back of the arm, extending the whole length of the posterior portion of the humerus.

The brachialis anticus is a broad muscle covering the elbow-joint and lower half of the front of the humerus.

A few of the most superficial muscles covering the forearm are: extensor carpi ulnaris, on the inner side of the forearm on the ulnar side; supinator longus, the most superficial on the radial side of the forearm; extensor communis digitorum, back part of the forearm.

A few of the superficial muscles covering the thigh and leg are: psoas magnus, iliacus, glutæus maximus, vaginal femoris, sartorius, tibialis anticus, tibialis posticus.

Of the chest the muscles of inspiration and expiration are the intercostal and the scalene muscles; the pectoral muscles and subclavius in front of chest; the serratus magnus at the sides of the chest.

At the back of the chest over the scapula are the supraspinatus, infraspinatus, teres major and minor, subscapularis—in front of scapula.

The chief muscles of the abdomen are the oblique muscles at the side and front of abdomen, the transversalis muscle,

and the recti abdominis, forming the whole front of the abdomen.

The lymphatics have derived their name from the appearance of the fluid contained in them (*lymph*a, Lymphatics. water). They are very delicate vessels and are found in almost every organ in the body, where there are bloodvessels. They are divided into two orders, the superficial and the deep-seated glands. Their office is to carry the lymph into the blood from the organs where they are situated.

The nervous system is composed of a series of large centers of nerve matter, called collectively the cerebro-spinal center; also of smaller centers, called Nerves. ganglia; and of the nerves, connected either with the cerebro-spinal axes or the ganglia; lastly of certain terminations of the nerves forming the organs of the external senses.

The cerebro-spinal center consists of two parts, the spinal cord and the brain, or encephalon ("in the head").

There are three membranes that envelop the spinal cord, which is enclosed in the vertebral canal: the dura mater, a strong fibrous membrane which forms a loose sheath around the outside of the cord; the pia mater, which is the most internal membrane; the arachnoid, which lies between the other two, its name signifying a "spider web," on account of its extreme thinness.

The brain is that portion of the cerebro-spinal axis that is contained in the cranial cavity. It is divided The brain. into four principal parts, the cerebrum, the cerebellum, the pons Varolii, and the medulla oblongata. The cerebrum is the largest portion of the brain. The cerebellum (little brain) is situated below the cerebrum. These parts of the brain consist, like the spinal cord, of gray and white matter. The pons Varolii consists of bands which connect the

various portions of the brain. The medulla oblongata is the enlarged upper part of the spinal cord, and is that portion of it that passes through the foramen magnum in the occipital bone, and is situated above the foramen.

The sympathetic nerve consists of a series of ganglia connected by intervening cords, extending on each side of the vertebral column from the base of the skull to the coccyx. It supplies in general all the internal viscera and the coats of the bloodvessels, and, through the latter, reaches all parts of the body.

The name of a nerve usually indicates its position; for instance, the nerves of the spine are named from the different regions of the vertebræ; as the dorsal, lumbar nerves, etc.

CHAPTER VI.

THE CIRCULATION—ORGANS AND PROCESS OF DIGESTION— ORGANS OF RESPIRATION AND CIRCULATION— ORGANS OF ALIMENTARY CANAL.

ALMOST all the fluids of the body are utilized for its nutrition and are for the most part secretions of special organs. Each will be described with the organ to which it belongs; these fluids are the blood, lymph, chyle, saliva, gastric juice, bile, urine, etc.

Only the blood will be studied here. It is a thickish, opaque fluid with a slimy feeling, is salty to the taste, slightly alkaline, and dries rapidly. Its specific gravity is about 1.055. It is dark red or purple in the veins, and bright scarlet in the arteries.

Human blood is composed of the following substances in different parts: water, albumen, fibrin, an animal coloring matter called hæmotosin, a little fatty matter, and different salts, chlorides of sodium and potassium, phosphate of lime, carbonates of lime, soda, and magnesia, oxide of iron, and lactate of soda, united with animal matter. In a colorless fluid called plasma, composed of serum and fibrin, there are innumerable little red and white bodies called corpuscles; the red corpuscles, even in health, are more numerous than the white, but the white are larger than the red.

When blood is shed and exposed to the air, it undergoes a change; in a very few moments it turns to a jelly-like

mass and is then said to coagulate ; this condition is caused by the fibrin separating from the serum and the corpuscles collecting in a mass in the plasma. The clot is called coagulum.

When there is a deficiency of red corpuscles in the blood, the patient is said to be anæmic ; when there is a superfluity of them, he is said to be plethoric.

When the blood coagulates in the vessels, impeding circulation, the clot causing the obstruction is termed *Obstructions in arteries.* thrombosis : a foreign body in a vessel causing obstruction, is called embolism. The blood is sent to all parts of the body by means of the heart, the great central organ of circulation. The arteries are the tubes through which the blood flows to all parts of the body from the heart. The veins are tubes through which the blood flows back again to the heart. The capillaries are a network of very tiny tubes, through which the blood passes as it goes from the extreme arteries into the beginning of the veins.

The heart is a great forcing and suction pump in the midst of all these bloodvessels ; when it contracts it forces the blood out through the largest artery, the aorta, which sends forth branches ; these branches divide and subdivide, so that at last the arteries through which the blood flows into the capillaries are very small indeed ; and when the heart dilates, it draws the blood back to itself through the veins by suction.

It is a hollow muscular organ surrounded by a membranous sac called the pericardium. It is situated in the cavity of the thorax. Its shape is something like a cone, with the apex directed downward and toward the left side, touching the walls of the thorax between the fifth and sixth ribs, where the beat of the heart can be felt.

It contains four cavities, two on the right side and

two' on the left, which are called the right and left ventricle and auricle; after birth there is no communication between the two sides. The right side of the heart, that is, the right auricle and right ventricle, contains the venous, or impure, blood; the left auricle and the left ventricle contain arterial, or pure, blood.

The capillaries get their name from the Latin *capilla*, a hair; they are so small that they cannot be seen by the naked eye. In any little cut or scratch the blood which oozes out comes from thousands and thousands of these tiny bloodvessels.

The arteries are very different from the veins in their structure and arrangement; they are of necessity very firm tubes, for the heart's action is strong, pumping the blood through them at every breath with considerable force. They are found in nearly every part of the body, except in the skin, hair, nails, cartilages, and cornea, being larger and more numerous in the extremities, and running in the inner side of the limbs where they are safer from injury; they divide and subdivide with considerable variety into what are called bifurcations.

They are dense in structure, quite strong and elastic, and when divided preserve their form, even though empty. They have three coats, the inner one of which is strong and fibrous; the other two are more delicate in structure. If the inner coat should become ruptured, as sometimes happens, the other two bulge out, forming a tumor, which pulsates at every breath, and as the blood is constantly pumped into the artery by each beat of the heart, it enlarges continually and in course of time may burst, causing death by hemorrhage; this is the disease called aneurism. In olden times the surgeon amputated above the aneurism, if it occurred in a limb,

thinking that if the artery was tied the limb would die for want of the necessary supply of blood ; but in these days the surgeon cures the disease and saves the limb too, by tying the artery. Immediately after the operation the limb is cold and there is plainly very little circulation in it, but in a short time the circulation becomes as good as before. There is a free communication between the arteries, which is termed *Anastomosis*. *anastomosis* ; this fact is of considerable interest to the surgeon, as it is by their enlargement that a collateral circulation is established after ligating the artery for the cure of aneurism. Thus there is a communication between the branches which extend from the artery *above* the aneurism, and those *below* it ; even the branches become enlarged to meet the exigency of the case. It is an interesting fact that anastomoses are most numerous in those parts of the body where aneurism is most likely to occur from violent exercise or sudden motion. The circulation effected in this manner is called collateral circulation.

The veins arising from the network capillaries are very *Veins*. small ; but they join as they proceed on their journey, and at length unite into two great tubes, called the *venæ cavæ*, which pour their contents into the heart, the one from below it, the other from above.

The veins are found in nearly every tissue of the body. They are larger and more numerous than the arteries ; consequently the capacity of the venous system is greater than that of the arterial. They also are composed of three coats, but are more lax than the arteries and collapse when empty ; like the arteries, they communicate very freely with each other. Almost all veins contain valves to prevent the blood from regurgitating—flowing in the wrong direction. They are divided into three sets, superficial veins, deep veins, and sinuses.

The superficial veins are found between the layers of superficial fascia immediately beneath the skin. They communicate with the deep veins by perforating the deep fascia.

The deep veins accompany the arteries and are usually enclosed in the same sheath. In the smaller arteries, as the radial, ulnar, brachial, peroneal, etc., they exist generally in pairs, one lying on each side of the artery. These are called *venæ comites*, that is, companion veins.

The larger arteries, the axillary, subclavian, popliteal, femoral, etc., have usually only one accompanying vein. In certain organs of the body the deep veins never accompany the arteries, as those of the liver, spinal canal, and skull. Sinuses are found only in the skull.

The usual office of the veins is to return the blood to the heart. There is, however, one exception to this, in that of the pulmonary veins. They contain arterial blood, which they return from the lungs to the left auricle; in like manner does the pulmonary artery carry the venous blood from the right side of the heart to the lungs.

There are really three circulations: the greater, or systemic, circulation; the lesser, or pulmonic, circulation; the portal circulation.

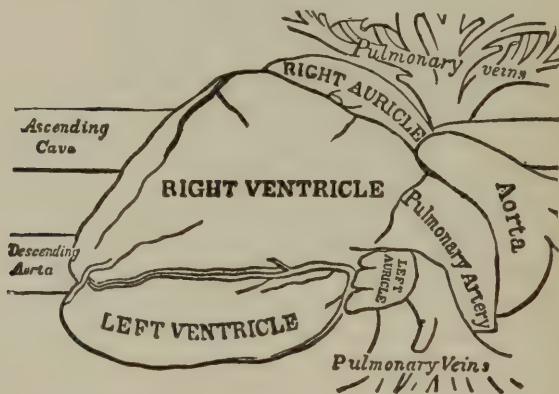
The venous blood is received from all portions of the body by the *venæ cavæ*, from the parts above into the descending cava, from the parts below into the ascending cava; these veins pour the blood into the right auricle. From there through the tricuspid valve it flows into the right ventricle; from the right ventricle through the semilunar valve into the pulmonary artery which divides into two branches and goes to the lungs. There the blood is oxygenated and returns by the four pulmonary veins to the left auricle, thence through the

The greater
circulation.

bicuspid, or mitral, valve into the left ventricle, from the left ventricle through the semilunar valve into the aorta, and from the aorta by means of the lesser arteries through the entire body.

The pulmonary artery arises from the right ventricle and carries the venous blood directly to the lungs. It is then returned by the pulmonary veins to the left auricle. This is called the lesser, or pulmonic, circulation.

The veins that collect the blood from the viscera of the abdomen unite in one large trunk called the vena portæ, and this trunk, instead of pouring its contents into the large vein that goes up to the heart, divides into branches like an artery and takes all this blood to the liver. In the liver these branches break up into a minute network of capillaries, which unite and form the hepatic veins by which the blood is conveyed from the liver to the inferior vena cava.



MAP OF THE CIRCULATION.

The aorta arises from the upper part of the left ventricle, ascends a short distance, then arches backward and to the left side over the root of the left lung. Directions of arteries.

Descending within the thorax on the left side of the vertebral column it passes through the aortic opening of the diaphragm, and entering the abdominal cavity terminates opposite the fourth lumbar vertebra, where it divides into the right and left common iliac arteries. So the aorta is divided into the arch of the aorta and the descending aorta, which is again divided into the thoracic and abdominal aorta. The arch describes a curve and is again divided into the ascending, transverse, and descending branches of the arch. The coronary arteries supply the heart; they are two in number, the right and left, arising near the commencement of the aorta above the semilunar valves. The left coronary artery is the longest. The innominate artery is the largest branch given off from the arch of the aorta.

The right carotid artery arises behind the right sterno-clavicular articulation. The left carotid arises from the highest part of the arch of the aorta. Carotid.

It extends obliquely outward from the thorax to the root of the neck. The external carotid artery ascends from the thyroid cartilage, upward and forward, then backward to the space between the neck of the condyle of the lower jaw, where it divides into the temporal and internal maxillary arteries, lingual, facial, occipital arteries, etc. The internal carotid artery commences at the bifurcation of the common carotid artery. This vessel supplies the anterior part of the brain, the eye and its appendages, and sends branches to the forehead and nose. The artery which supplies the upper extremity is one single trunk, but receives different names according to the region through which it passes; that which extends to the lower border of the first rib is termed

the subclavian, thence to the lower border of the axilla it is termed the axillary, and from the lower border of the axillary space to the bend of the elbow it is called brachial. Here the trunk divides into two branches, the radial and ulnar, and extends thence to the palmar arch.

The thoracic aorta commences at the lower border of the fifth dorsal vertebra on the left side and terminates at the aortic opening of the diaphragm.

The abdominal aorta commences at the aortic opening of the diaphragm, and descends to the body of the fourth lumbar vertebra where it divides into the two common iliac arteries. The bifurcation usually takes place on the left side of the body of the fourth lumbar vertebra; this point corresponds to the left side of the umbilicus and is on a level with a line drawn from one iliac crest to another. They pass to the margin of the pelvis and divide, between the last lumbar vertebra and the sacrum, into two branches, the external and internal iliac arteries. The external iliac supplies the lower extremity; the internal iliac supplies the viscera and walls of the pelvis, the generative organs, and the inner side of the thigh.

The femoral artery is a continuation of the external iliac artery; as it descends the thigh at the popliteal space it takes the name of the popliteal artery. Below the knee it becomes the anterior and posterior tibial arteries, and lastly it branches off into the arteries of the foot.

The organs of digestion are :

The hand.

The mouth.

{	Lips.
	Tongue.
	Teeth.
	Cheeks.

Salivary glands.	{	Parotid.
		Submaxillary.
		Sublingual.

Palate.

Pharynx.

Œsophagus.

Stomach.

Liver.

Gall bladder.

Pancreas.

Small intestine.	{	Duodenum.
		Jejunum.
		Ilium.

Large intestine.	{	Cæcum.
		Colon.
		Rectum.

The process of digestion consists of six stages: prehension of food, mastication and insalivation, deglutition, chymification, action of small intestines, and defecation.

Prehension is the act of taking the food into the mouth. It is performed mainly by the hand, assisted by the lips and cheeks and the anterior teeth and the tongue.

Mastication is the comminution of food, and is performed by the teeth. While they cut and grind the food, it is at the same time thoroughly moistened with the saliva which comes from glands in the mouth. There are three pairs of these glands: the parotid, submaxillary, and sublingual. The parotid gland, the largest, lies in front of the lower part of the ear. The submaxillary gland is situated inside of the lower jaw. The sublingual gland lies under the tongue, and is the smallest of the three glands. The secretion of the parotid and submaxillary glands is thin and limpid and assists mastication;

Mastication
and insali-
vation.

that of the sublingual gland is thick and glutinous and assists deglutition.

Deglutition.—When the food has been ground by the teeth and moistened by the saliva, it is first collected into a bolus and glides back over the surface of the tongue into a large cavity at the back of the throat called the pharynx. In the pharynx are the openings of two tubes, the œsophagus, or throat, which is the passage to the stomach, and the trachea, or windpipe, which is the passage to the lungs. As the œsophagus lies behind the trachea, the food in passing to it must go directly over the opening of the trachea; to prevent the food from entering it there is a little tongue-shaped body called the epiglottis, extending back from the root of the tongue, to act as a lid to the glottis, which is the opening into the trachea. During the act of swallowing the lid is shut down, but is raised during the acts of breathing and speaking. In swallowing not only does the epiglottis cover the glottis, but the larynx rises to meet it. Deglutition may be said to be divided into three stages:

1. The bolus glides over the surface of the tongue and the palatine arch until it passes the anterior arch of the fauces.
2. The bolus is carried beyond the constrictors of the pharynx.
3. The bolus reaches the stomach through the cardiac orifice at the end of the œsophagus; this tube is made up of circular and longitudinal fibres, by the action of which the food is propelled into the stomach. As the bolus descends through the œsophagus the muscles dilate and they contract immediately after the bolus is passed. These three stages follow each other with great rapidity; the first action is voluntary, the other two involuntary. (During vomiting the action of these muscular fibres is reversed.)

At the end of the œsophagus is the cardiac orifice through which the bolus enters the stomach. It is a sort of sphincter muscle that opens when pressure is made upon it by the food, and lets it pass into the stomach, closing again to keep the food from regurgitating into the œsophagus. The food is then acted upon by the movements of the stomach, caused by the constant motion of the fibres of its muscular coat. This keeps up a sort of churning which effects a thorough mixture of the food with the gastric juice. By a combined chemical and mechanical action of the stomach the food is in three or four hours reduced to a grayish semi-fluid mass called chyme. During the process there is no communication between the stomach and the intestines; the aperture between them has been closed by a valve, called the pylorus—which is derived from two Greek words meaning to guard the gate—and a faithful little guard it proves to be, not ordinarily allowing any undigested food to pass it. Although during the process of digestion the undigested food is thrown against this little gate, it remains closed until the food is thoroughly changed to chyme; it then opens and the chyme passes into the intestines. Solid substances, however, that cannot be digested, pass the pylorus without difficulty, as buttons, pieces of money, etc. In the case of undigested food, if the pylorus continues to resist the passage of it into the intestine, the action of the stomach is reversed and the offending matter is vomited. The food is also acted upon by the temperature of the stomach, which is about 100° Fahrenheit.

The passage of the chyme through the pyloric orifice is at first slow, but when digestion is nearly completed it passes through in large quantities.

Chymification.

The action of the small intestine.

The chyme is mixed in the duodenum with secretions

from the pancreas, also with bile from the liver and the gall bladder. This has an effect upon it chemically and has also some agency in separating the nutritious part of the chyme from that which is not so. The nutritious part is a milky fluid called the chyle. The little tubes, or ducts, which absorb it are called lacteals.

The large intestines act as a reservoir, an excretory canal
Defecation. for the fæces, the voluntary escape of which is prevented by the sphincter in the rectum.

The organs of respiration and circulation are as follows:

The larynx is the organ of voice placed at the upper part of the air passage; it is situated between the trachea and the base of the tongue.

The trachea, or windpipe, extends from the lower part of the larynx, from the sixth cervical vertebra to opposite the fourth or fifth dorsal vertebra, where it divides into two branches, called the bronchi, one for each lung.

Each lung is invested upon its external surface by a very
The pleuræ. delicate serous membrane, the pleura, which encloses the lung as far as its root and is then reflected upon the inner surface of the thorax. That portion of the pleura covering the surface of the lung is called pleura pulmonalis; that which lines the inner surface of the chest is called pleura costalis; the space between the two cavities is called the cavity of the pleura. Each pleura is a separate sack, one in the right and one in the left part of the thorax. There is no communication between the sides; a space is thus left between them which contains all the viscera of the chest except the lungs and heart; this space is called the mediastinum.

The lungs, of which there are two, are the main organs of respiration and are situated one on each side of the chest.

Each lung is conical in shape, the apex extending into the root of the neck about an inch or an inch and a half above the level of the first rib ; the base is broad and rests upon the convex surface of the diaphragm. The left lung is divided into two lobes, an upper and a lower one. The right lung is divided into three lobes. The right lung is larger and heavier than the left, but shorter. The structure is spongy, consisting of air vesicles held together by cellular tissue termed parenchyma, through which run bloodvessels and air vessels. The root of each lung consists of the bronchus, pulmonary artery, two pulmonary veins, bronchial artery and veins, nerves, and lymphatics.

The lungs.

The alimentary canal is the name given to a tube which comprises all the organs of digestion and viscera of the abdomen, from the mouth to the anus, a distance of thirty-five feet.

Organs contained in the alimentary canal.

The pharynx is that part of the alimentary canal which is placed behind the nose, mouth, and larynx. It has seven openings communicating with it, the most important of which are the following : the posterior nares (which are the two large apertures at the upper part of the anterior part of the pharynx), the mouth, the larynx, and the œsophagus. The anterior nares are the two apertures of the nose, ordinarily termed the nostrils ; these of course are not openings of the pharynx.

The pharynx.

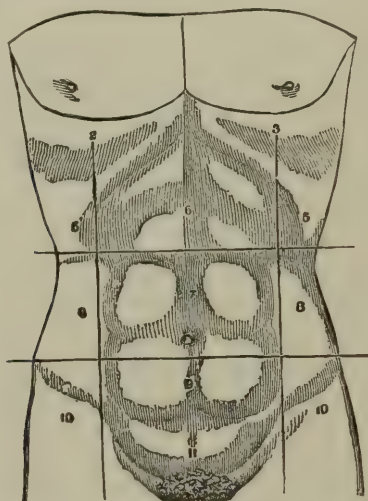
The œsophagus, or gullet, about nine inches in length, extends from the pharynx to the stomach, at which point is the cardiac orifice. The structure of the œsophagus has been explained in the process of digestion.

The œsophagus.

The abdomen is the largest cavity in the body. In this book it is divided for convenience in study, into the abdomen proper and the pelvis. These

The abdomen.

cavities are not separate, but are marked by the brim of the true pelvis. The abdomen contains the greater part of the alimentary canal and some of the greater organs of digestion, as the liver, pancreas, spleen, etc.



The cavity of the abdomen is divided into nine different regions : the epigastric region (6), which contains the left lobe of the liver, right half of stomach, pancreas ; the right hypochondriac (5), containing right lobe of liver, gall bladder, duodenum, part of arch of colon, top of right kidney, right supra-renal capsule ; the left hypochondriac (5), containing large end of stomach, spleen, part of pancreas, upper part of left kidney, left supra-renal capsule ; the right lumbar (8), containing ascending colon, part of right kidney, part of small intestine ; the left lumbar (8), containing descending colon, lower part of left kidney, part of small intestine ; the hypogastric (9), containing portions of small intestine, bladder in child and

Viscera of
the abdo-
men.

in adult when distended, uterus in pregnancy in females; the right iliac (10), containing cæcum, right ureter; the left iliac (10), containing sigmoid flexure of the colon, left ureter.

The mesentery is a broad sheet of membrane which fastens the whole tract of the intestinal canal to the spine, thus guarding it against accident; it also acts as a medium for the passage of bloodvessels and nerves to the intestines and contains little tubes which convey all the nutriment into the blood for the growth and repair of the body.

The peritoneum is a serous membrane which lines the abdominal cavity and extends over most of the organs contained in the abdomen. In health it secretes a small quantity of fluid which lubricates the surfaces of the viscera so that they readily move upon the walls of the cavity. It also forms ligaments by which the organs are held in their places.

The stomach is the principal organ of digestion, the most dilated part of the alimentary canal. It is an irregular cone-shaped organ, and is placed immediately behind the anterior wall of the abdomen. It has four coats, a serous, a muscular, an areolar, and a mucous coat, with nerves and bloodvessels.

The small intestine is that part of the alimentary canal in which chyme is mixed with bile, the pancreatic juice, and the secretions of the various glands imbedded in the mucous membrane of the intestine; also where the separation of the nutritive substance in the food—the chyle—is effected. It is a convoluted tube of about twenty feet in length, which gradually grows smaller from the beginning to the end. It is divided into three portions: the duodenum, receiving its name from the fact of its

being about eight or ten inches in length or the breadth of twelve fingers ; the jejunum, so called from usually being empty after death ; and the ilium, from a Greek verb, to twist, because it is convoluted.

The large intestine extends from the end of the ilium to the anus. It is divided into three portions : the *The large intestine.* cæcum, from a word meaning closed or blind ; the colon, which is divided into four parts, the ascending, transverse, descending and sigmoid flexure (this last named from its resemblance to the Greek letter “sigma”) ; and the rectum, extending from the sigmoid flexure to the anus. The rectum is from six to eight inches long ; the lower portion is about an inch or an inch and a half in length. At the commencement of the lower portion is the internal sphincter, and at its termination the external sphincter muscle. The anus is the terminal opening of the rectum.

In the male the triangular space between the anus and part of the urethra, and in the female the part between the anus and the vagina, is termed the perineum.

The liver is a glandular organ which secretes bile ; it also *The liver.* effects changes in the constituents of the blood, in their passage through it. It is the largest gland in the body, weighing from three to four pounds ; it has two lobes of which the right is larger than the left. There are five vessels connected with it ; the hepatic artery and vein, the portal vein, the hepatic duct, and the lymphatics.

The gall bladder is a reservoir for the bile, on the under *The gall bladder.* surface of the right lobe of the liver. It is about four inches in length and one in breadth at the widest part.

The pancreas and spleen are glands that perform different offices in the process of digestion ; their position is explained

in the diagram of the nine different regions of the abdomen.

The kidneys are situated in the back part of the abdomen from the level of the eleventh rib to near the crest of the ilium. Their office is to secrete the urine. The ureters are two tubes which conduct the urine from the kidneys into the bladder.

The supra-renal capsules are two small bodies placed one on each side just above the kidney and resting on its upper extremity.

The cavity of the pelvis contains the urinary bladder, the rectum, and some of the generative organs peculiar to each sex.

The bladder is a reservoir for the urine, situated in the pelvis; in the male it is behind the pubes, directly in front of the rectum; in the female the uterus and vagina lie between the bladder and the rectum. The shape and position of the bladder is greatly influenced by age, sex, and the degree of its distension.

CHAPTER VII.

GENERAL REMARKS ON FEVERS.

TEMPERATURE, pulse, and respiration are sometimes termed the three vital signs. During the progress of all diseases they are more or less affected, and according to the degree of their changes the physician is enabled to decide upon the nature of the disease itself. These signs are also the principal guides to the nurse; by them she judges the condition of her patient, whether better or worse. Hence she should study them well in order to report accurately any changes occurring in them.

The first question to be considered in the study of fever is obviously: "What is fever?" The word may be defined thus: Fever is an elevation of the temperature in the body from various causes: the entrance of microbes or germs into the system, as in blood poisoning following a surgical operation or in typhoid and scarlet fevers, etc.

This rise of temperature is always accompanied by increased tissue change, which is the chief characteristic of fever; the rise of temperature is the result of the abnormal rapidity of the destruction of the tissues. The normal temperature of the body is about $98\ 2\text{-}5^{\circ}$. It is a singular fact that in childhood, youth, mature life, and old age, and in all climates the normal temperature remains unchanged, the diurnal revolution of the temperature varying less than

a degree ; with young children the temperature is likely to change more easily and with slighter causes than with adults.

When there is depression or debility from loss of blood, or at the close of acute diseases, and during the period of convalescence the temperature falls to 98° or lower ; it is then termed a subnormal temperature ; when it rises above 100° it is termed a febrile temperature ; and when it rises above 105° it is termed hyperpyrexia. Sometimes the temperature after death is higher than before ; this is caused by the continued destruction of tissue after death.

The temperature may be taken in the axilla (armpit), under the tongue, in the groin, and in the rectum. When taken under the tongue the temperature will be most nearly correct, and this mode therefore should be the one followed whenever practicable. It is moreover the quickest mode, the thermometer registering in three minutes, but unless in a great hurry, the nurse should leave it in the mouth four minutes, being careful to see that the lips are tightly closed during that time. Objection is often made to this manner of taking the temperature in that it is not cleanly, but there should be no reason for this objection. When the temperature is taken in the mouth the thermometer should be washed each time after using just as the medicine glasses are ; looked upon from this point of view, the one is just as cleanly a practice as the other. In a ward where there are between twenty and thirty temperatures to take, morning and evening and perhaps oftener, the nurse who uses this method will finish that important part of her work much sooner and more satisfactorily than she who makes her observations in the axilla. She must have ready one or two thermometers and a bowl in which is a weak solution of permanganate of

Taking the
temperature
under the
tongue.

potash or 1-40 carbolic acid in which to lay them after using, and a little soft cloth to wipe them after their immersion. But there are cases when taking the temperature under the tongue is entirely out of the question: when the patient finds it difficult to breathe, when he is delirious, when he has an affection of the mouth or throat, when restless, or when from any cause it is difficult to keep the head still. This mode may be followed, however, in almost all convalescent periods, surgical cases, etc.

The next best place to take the temperature is in the axilla. The observation should be taken in this manner: Free the clothing from about the neck, and wipe the axilla quite dry. (The reason for this is twofold, first, that all perspiration may be removed; second, that the slight friction the skin receives from so doing may aid superficial circulation, thus rendering the observation more correct.) Then insert the bulb well up into the armpit horizontally, not perpendicularly or the thermometer will be upside down, then draw the arm across the front of the chest so that the patient may clasp the opposite shoulder with his fingers. Care should be taken that the thermometer lies between the two surfaces of the skin, so that it does not come in contact with the clothing. It should remain at least seven minutes to obtain a correct temperature.

The rectum and groin are the best places to take the temperature of infants and small children. In the event of delirium, the rectum is often the safest place to make the observation.

The temperature should be taken at fixed hours; the best time in febrile cases is between the hours of 7:00 and 8:00 a. m. and 7:00 and 8:00 p. m. At this time the temperature is lowest in the morning,

Taking temperature in the axilla.

When to take the temperature.

and highest in the evening. The number of times it is repeated in twenty-four hours depends of course upon the order of the physician in charge. If the frequency of repeating the observation be left to the nurse, she should take it in ordinary cases, morning and evening, at the times specified above; in febrile cases about seven times in twenty-four hours, for instance: at 8:00 a. m., 12:00 m., 4:00 p. m., 8:00 p. m., 12:00 p. m., 4:00 a. m., 8:00 a. m., etc. Lastly, in all cases she should take it whenever anything unusual occurs, for instance, if the patient complains of being cold or hot, weak, nervous, or in pain, or if the nurse notices any change in the appearance of the skin or in the general demeanor. If at any time the temperature should show a decided rise or fall, when compared with the last report, the observation should be repeated before reporting; it may turn out to be a mistake. There is no branch of her profession in which the nurse is called upon to exert greater truthfulness and accuracy than in the taking and reporting of temperatures; and nowhere is a lack of conscientiousness so heinous a crime; the difference of a tenth of a degree may be of vast importance, and the nurse who is careless or untruthful in this respect—and of course in any other—is not fit to remain in the profession.

In general it is necessary for her to sit by the patient while taking the temperature, to hold the arm, or lightly to press the lips together. A sick person should not be expected to burden his mind or his muscles with the responsibility of keeping the thermometer in place.

Temperature-taking is termed medical thermometry. The instrument used is called the clinical thermometer; the best is the self-registering sort, ^{The clinical thermometer.} and is made so that a small portion of the mercury separates from the main column, and as the latter falls down to the bulb, this portion remains fixed in the tube for any length of

time at the degree of temperature it has registered. Consequently, immediately after ascertaining the degree of fever and reporting it, the index should be shaken down to 95°, by holding the thermometer firmly in the fingers at the upper end and giving it a couple of sharp flings outward.

It is well for the nurse to procure one for herself. Those that have been properly tested have a certificate accompanying them, and are the only really reliable ones. They should all be tested and thoroughly seasoned before they are used ; after being made, they should be laid away for from three to six years *before they are scaled*, because the glass expands, and in so doing contracts the size of the tube holding the quicksilver ; consequently if they are scaled too soon they will register too high.

In order thoroughly to understand what causes the pulse
The pulse. beats, it is necessary to describe in a superficial manner, the heart's action. The four apartments—the right and left ventricle and the right and left auricle—act in harmony with each other. The auricle and ventricle of one side act in connection with each other ; the auricle contracts when the ventricle dilates, and the ventricle contracts when the auricle dilates. Now the harmony of action between the two sides is preserved by having the two auricles act together, and the two ventricles together. This action produces two sounds which can be heard by applying the ear to the chest ; the first sound is a long and heavy one, the second light and quick ; the first sound occurs when the ventricles contract, the second is caused principally by the flapping together of the valves at the mouth of the aorta and pulmonary arteries when the ventricles dilate. The pulsation is produced by the impulse given to the blood by the contraction of the ventricles ; it may be felt at any part of the body where there is an artery, more

or less distinctly according to the situation of the artery itself, whether deep-seated or superficial. The pulsation of the radial artery at the wrist can be distinctly felt and is generally used to count the pulsations of the heart; the pulse at the temporal artery can also be felt distinctly.

The pulse varies greatly in different diseases, and even in health it varies from different causes: excitement, eating, or exercising will increase the pulse; hunger or fatigue will depress it. The nurse should make a special study of the pulse that she may know how to express and properly report the different phases it assumes. The best way to take a pulse is to lay the first two fingers lightly upon the radial artery at the wrist and count the beats for fifteen seconds; then, if, for instance, the pulse is found to give twenty-one beats to the quarter, multiply that number by four, which will show the pulse in this instance to number eighty-four beats to the minute. In women the beats are a trifle faster than in men. It is often necessary to count the full minute when the pulse is abnormal; in any case, however, the beats to the quarter should be counted twice before reporting.

The normal pulse ranges from seventy-two to eighty beats per minute; yet there are instances where a pulse may be either higher or lower than that and still be the normal pulse, for that individual.

A regular pulse is one in which the beats occur at regular intervals and are of the same degree of strength.

An irregular pulse is one in which the beats are irregular, both as to time and strength. An in-

*Description
of the differ-
ent kinds of
pulses.*

termittent pulse is one in which a beat is lost; it may occur a couple of times in the course of a minute, or two or three beats may be dropped at one time; a pulse at times might be both intermittent and irregular, but the irregular pulse is the more serious of the two. A compressible pulse is one

which, with a little firm pressing on the artery, seems to be annihilated. A dicrotic pulse is one to which there seems to be a decided resonance after the beat, a second beat following the first, but much lighter and smaller. Low, weak, or feeble pulses are those that strike the fingers feebly. A thready pulse is one in which the beats mix together, resembling a thread slightly vibrating. A fast, or frequent, pulse is one in which there is an abnormal number of beats in a given time. An irritable pulse is frequent, hard, and contracted. A large, or full, pulse is one in which the beats give the impression of the artery being very full of blood. A strong, or bounding, pulse is one in which the finger seems to yield to the pulsation. A slow pulse is one which contains a less number of beats than the normal pulse.

The nurse in taking the respirations should be careful to make her observations at a time when the patient is not aware of it ; a good way to accomplish this is to take the pulse first, and with the finger still at the wrist, watch the bedclothes as they rise and fall, counting the number of respirations. The normal respirations to the minute are from sixteen to twenty ; any number above or below these is indicative of something wrong, and should be reported. Respirations have received different names according to their characteristics. They may be regular or irregular ; a type of the irregular is termed jerking, that is, when the inspirations are interrupted, as by starts. Superficial respirations are light, causing scarcely any visible impression on the bedclothes. Deep respirations are full and large, drawn from the base of the lungs. Deep, snoring respirations are called stertorous. Chyane-Stokes respirations occur in some diseases shortly before death ; they are at first short, superficial, and rapid, becoming gradually deeper, longer, and slower, then they gradually become faster and

more superficial, until they cease altogether; after an interval of ten or twelve seconds this action is repeated.

There are many symptoms that occur before an attack of fever, and many changes in the general system that accompany it. In the nervous system—chills, pain in the bones, back-ache, and sometimes a stupor appear before the fever does. In the digestive system—the tongue is dry and coated, the coating sometimes separates, leaving the tongue glazed and parched, the mucus thick and shiny, the patient often unable to expectorate it. All these symptoms indicate a change in the functions, and a morbid condition of the glands. The change in the secretions of the glands is not only in the tongue and mouth, but throughout the whole system. Further symptoms are: loss of appetite and great thirst, caused by the tissues lacking the power to re-establish the lost secretions.

On account of the change in the secretions of the stomach, it cannot perform the labor of digestion, but rejects food; therefore the patient should be given only so much nourishment of a liquid form as can well be assimilated. The changes in the bowels vary in different diseases; in many epidemics profuse diarrhoea is present, but sometimes the bowels are costive, as in typhus fever. The kidneys also undergo a change; as the skin fails to carry off any of the secretions of the body—on account of its disabled tissue—the kidneys are forced to do extra work. Almost all fevers arise from infecting influences; the germs entering the system, affect and change the condition of all its organs. The changes are, according to the disease, more or less rapid, but in all cases they are successive.

General
symptoms.

Changes in
the secre-
tions.

Almost all contagion is infectious, but infection is not necessarily contagious. Typhoid fever is only slightly contagious, but infection from it is spread by means of the excreta. Lousiness is preëminently contagious, but could scarcely be termed infectious. The difference between them may be explained thus: contagion is caused by actual contact, touching the clothes or the patient—as in scarlet fever—while infection is the entrance into the body of morbid principles from without, either by inhaling the germs, by blood poisoning, or in some other manner.

For many years the classification of fevers has been the cause of much disputation; so much has been written and said on the subject that it is now somewhat embarrassing to know just how the classification should be made. The usual manner is to arrange them in three groups: continual, periodical, eruptive. Continual fevers are those which have no regular course to run, but continue indefinitely; nervous, and the so-called “slum-fever” are of this class. Periodical fevers are those that recur at stated intervals, as malarial and intermittent fevers, etc. Eruptive fever is one which accompanies the breaking out of an eruption on the skin, as in scarlet fever, smallpox, etc. Septic fever does not belong to either of these groups, but is essentially symptomatic, accompanying blood poisoning, etc.

When a fever has run its course, and after the infection has passed through the whole system, then is the time to begin to build up the wasted tissue. The germ in disease is like a plant in the soil. When a certain seed has drawn all the nutrition from the soil that is needful for its

growth, another seed of the same kind will die if planted in that soil. So it is unlikely that the system will be susceptible to the same poison more than once, though it sometimes does occur.

The distinguished Dr. Graves wished his epitaph to be, that it should never be said of him that he ever starved a fever. Before his time very little nourishment was given in fever, which was left to run its course unmolested. The happy medium, however, is neither to starve nor overfeed, but to give just as much as will be assimilated. The nurse should study to make the diet in fevers—which is largely liquid—as varied as possible. See “Food for the Invalid,” pages 254-273.

Great thirst is usually prevalent in fever. The usual treatment at the present time is to give all the drink necessary to quench the patient's thirst; not too much, however, should be given, as it causes vomiting, or the fluid remains in the stomach and dilutes the food that is next given.

Cold is not easily taken in febrile cases, so that plenty of air should be allowed. It serves to keep the patient's temperature down, and as the poison is constantly given off from the lungs and skin, the more air allowed the less danger there is of infection. No strong draughts should be allowed in the room except when it is being aired; then the patient should be very carefully covered. At other times of the day care should be taken to keep the temperature of the room at its proper height, which should be between 62° and 70°. The patient should be consulted about the amount of light in the room. Absolute quiet is necessary; the patient should not be disturbed either by business or social intercourse of any kind; by observing this rule the risk of contracting the disease is greatly lessened.

Expectant method : Formerly it was the case that as fevers were known to run a definite course, the patient was placed where the influences were most favorable ; was made to rest, was properly fed and watched, and the fever allowed to run its course ; but it was discovered that certain symptoms arose that greatly disturbed the patient and sometimes endangered life, such as diarrhoea, severe headache, etc. This gave rise to a new course of treatment in which medicines were given to control the diarrhoea and insure rest. The combination of these two methods is called the rational treatment, and consists in letting the fever run its course, but at the same time watching and controlling the adverse symptoms.

The term pyrexia means the general febrile condition. The antipyretic treatment is that in which the greatest attention is given to pyrexia. It has been found that by lowering the temperature the symptoms will be relieved though it will not stop the course of the fever.

Frequent sponging with water and vinegar is often desirable, sponging either a part or all of the body with water heated to about the temperature of the patient's body, then cool water added gradually, thereby reducing the patient's temperature.

The bath can be given in a variety of ways ; the nurse of course must obey the physician's orders as to the mode she shall follow. Some physicians resort in these days to the specific treatment in a slight degree. It is well to have restoratives at hand in giving a bath.

In infectious diseases the germs find in the fluids of the body space to grow and multiply. If an antiseptic fluid is injected into them it weakens and checks the growth of the germs. If, however, the fluids of the body are overcharged with antiseptics, the result will be disastrous ; consequently

only so much should be injected as will cause it to be unfavorable to the growth of the germs, and to lessen their malignity, but not enough entirely to destroy them.

After all acute diseases the room should be thoroughly fumigated as explained on page 22.

Diseases that are more or less prevalent at all times are termed endemic. Diseases that break out suddenly and with violence in a community, are termed epidemics. At the commencement of an epidemic the cases are most severe and the death-rate high, but toward the end it loses its intensity, the cases are less severe, and the death-rate lower, this is particularly true of scarlet fever.

CHAPTER VIII.

SCARLET FEVER—MEASLES—DIPHTHERIA.

Scarlet fever is one of the most contagious and dangerous of the eruptive fevers. There are two types, the mild and the malignant. A popular fallacy exists among many people, that when the doctor pronounces the disease to be scarlatina he means that it is a mild type of scarlet fever, and perhaps in consequence less care is taken to prevent contagion. This is a great mistake, and the nurse should not fail to rectify it, and moreover make the point clear, that in the mildest forms of the disease the contagion is *equally imminent*, as the infection is in the atmosphere surrounding the patient, in his clothing, and his breath. The period of incubation is from one to six days after exposure to the disease.

The attack commences usually with the following symptoms: a chill—which is sometimes wanting; vomiting—especially in children; diarrhoea—in most cases; temperature very high—more so than in most eruptive diseases; bleeding at the nose—not uncommon; pain in the head; sore throat; prostration. In malignant cases all these symptoms are very severe, in mild cases they are sometimes so slight that the patient does not go to bed. The duration of this stage of the fever is usually about twenty-four hours. The stage of the eruption sometimes begins in children with a convulsion; it usually

Scarlet fever
and scarla-
tina.

Symptoms
of scarlet
fever.

appears on the second day, not coming with any regularity, however, as in measles and smallpox. It appears first on one part of the body and then on another. The rash is a bright scarlet and remains longest where the skin is most delicate, in the axilla, groins, and popliteal spaces, etc. It attains its intensity on the third day after its appearance and lasts from four to six days, sometimes longer. The tongue presents a strawberry-like appearance, a condition peculiar to this disease; in the early stages it is coated. The pulse varies from 100 to 140 per minute; in children it rises still higher. The temperature rises to 105° and often higher; delirium, except in very mild cases, sets in; restlessness and insomnia are more or less marked. After the eruption fades, desquamation (peeling off of the skin) begins, and sometimes lasts two or three weeks.

Isolate the case in the upper story of the house if possible, remove all unnecessary furniture, have no carpet, curtains, or upholstered chairs in the room; Nursing of
scarlet fever. hang sheets at the doors and keep them wet with 1-100 bichloride; immerse the bed linen in boiling water before removing it from the room; choose a room with a fireplace if possible; follow directions given in "Care of Sick-Room," page 17.

The nurse should watch the state of the urine; if scanty there is danger of nephritis or albuminuria. Hemorrhage also may occur from any part of the body.

For irritability of the skin lard is used very freely, applied over the entire surface of the body, though of late years physicians more frequently order cologne, or alcohol and water, or glycerine. If lard is ordered the salt and alum should first be extracted. This can be done by placing the lard in a bowl and pouring hot water over it; when cool the lard will rise to the top; then take it out and beat

until quite light ; apply about every four hours. The nurse should keep the bed linen clean as long as possible, thus lessening the danger of spreading the disease.

During the period of desquamation large pieces of skin are loosened at once ; occasionally the cuticle of the hands and feet is detached in one piece like a glove ; all this should be gathered up, even to the minutest particle, and *burned*. Abscesses may occur and the nurse should be most particular in following the doctor's orders in regard to the manner of dressing them ; poultices and the water dressings are generally used.

To reduce the temperature. To reduce the temperature. day is sometimes ordered. The nurse should inquire of the physician if he has a preference in the manner of giving the bath. For a sponge bath the *modus operandi* is as in typhoid fever. If wet cloths are ordered dip a sheet in water of 70° Fahrenheit and wrap the patient in it with no other covering, having first placed a rubber sheet on the bed, the surface sprinkled with cool water as described in typhoid fever. If the wet pack is ordered the patient is, as above, enveloped in the sheet wet with water of 70° and closely covered with several blankets. After an hour or more the pack is removed, the body wiped dry, and the patient dressed and covered. This treatment is very agreeable to a sick person, and often brings a refreshing sleep. Besides lowering the temperature it also lowers the pulse and acts as a diaphoretic and there is no danger of catching cold.

The atomizer for the relief of the throat should be used carefully so that the spray reaches the back of it. The tip of the atomizer should be allowed to rest against the teeth, thus giving it support and avoiding the necessity of resting it against the tongue. An atomizer should be constantly at

work in the room ; if a regular made one cannot be procured a substitute can be made by means of a simple alcohol lamp over which a saucepan is suspended containing an antiseptic solution which is kept constantly boiling. This lessens the danger of infection and makes the air easier for the patient to breathe by keeping it moist.

Convulsions sometimes occur in malignant cases, often with serious results. Inhalations of chloroform are generally used to stop them, but this treatment is of course beyond the prerogative of the nurse, and it is perhaps unnecessary to mention it here. In district work or where a doctor cannot be obtained, the nurse may use it with caution ; she may also give the wet pack as before described and keep hot applications over the loins, in this emergency.

Particular care should be given in the convalescent stage. As in *all acute diseases* there is danger of heart failure, the patient should not be allowed to make sudden movements or to take much exercise, though it is well, proper precautions being taken, to wheel him in the open air, even in the early stages of convalescence. The directions given for taking the temperature, pulse, and respiration, and those for ventilation, food, etc., in "General Remarks on Fevers," apply to all the acute diseases, and need not be repeated in the description of each one.

It may be wise to insert here a few words of caution for the nurse. While nursing fever cases it is desirable that she be in good physical condition ; she should be careful in regard to contagion and infection. If she has not herself suffered from an eruptive disease it is better for her, if possible, not to accept the care of such a case. She should observe the greatest precautions concern-

Convulsions.

Danger of heart failure.

Caution to the nurse.

ing disinfection; cleanliness in every respect is the most complete and effectual way to prevent the spread of infection. Besides having sheets wet with bichloride hung at the doors, the floor should be swept or mopped daily with 1-1000 bichloride. Soft cloths should be used for the discharge from the throat and nose, and they should be placed in a vessel in which is a solution of 1-1000 bichloride, and afterward burned. In scarlet fever and measles she should have in an adjoining room or hall a separate suit of clothes which she should put on before passing through the building. This is not so necessary in cases of diphtheria.

Measles from a medical point of view is of less importance than most eruptive fevers, but from the nurse's point of view it is of vast importance, for the result of the disease depends upon the care she gives it. Carelessness during any of its stages may cause serious sequelæ (after effects). It is contagious and starts with loss of appetite, chilly sensations (rarely a decided chill), rise in temperature seldom exceeding 102° , pain in the back, legs, and head, constipation, and in the cases of children it sometimes begins with a convulsion. The disease is not considered dangerous unless it assumes a malignant type called rubeola nigra, or black measles. In either case the danger is dependent on complications which may arise. Bronchitis, pleurisy, pneumonia, trouble with the eyes, and hydrocephalus (in young children) are the usual sequelæ. The disease is more serious for adults than for children. The period of incubation is from ten to fourteen days. The rash appears after about two days' illness; small red dots resembling flea-bites appear on the temple and forehead, and afterward run together forming blotches. The rash fades on the seventh day of fever. At this time desquamation begins; this stage is

sometimes wanting but is generally more or less marked. The skin is exfoliated in branny scales not in flakes or patches as in scarlatina. This marks the beginning of convalescence. The duration of the disease is from ten to twelve days.

Obtain a room in which there can be free ventilation. The air should be changed frequently by opening a window, first protecting the patient from drafts (which are at all times dangerous) by covering the head as well as the body. Sponging is generally ordered, using salt water of 90° or lower if the temperature is high. Dark muslin should be tacked over the windows as a protection to the eyes if the room cannot be otherwise darkened. It is a common fallacy that the "striking in" of a rash is the cause of complications. The truth of the matter is that the *complication has already occurred*, and causes the disappearance of the rash. Nurses should, if possible, prevent parents from overburdening their children with hot drinks and heavy bedclothes in order to help the rash appear. The physician is more likely to order a cool sponge at this stage of the disease. She should correct another mistaken idea, that of voluntarily exposing well children to the disease in order to have "the trouble over at once."

Special watchfulness should be given during the period of convalescence, for it is in this way that serious results may be prevented. Draughts and dampness are at all times dangerous. The same attention should be given to isolation and disinfection as in all other eruptive diseases.

In diphtheria the period of incubation is from two to eight days. The attack begins with a sore throat, followed by chilliness, pain in the back and limbs, headache, thirst, fever, prostration, the pulse weak, rapid, and compressible.

Nursing of
measles.

Symptoms of
diphtheria.

While diphtheria is a dangerous and terrible disease, it is not so infectious as scarlatina or measles. For instance, it is communicated only by *actual contact* with the germ. The nurse or doctor may contract it by inhaling the patient's breath or from instruments used for the patient and not disinfected. But the germs are *not* carried about in one's clothing, as in scarlet fever and measles. The glands in the neck usually become very much swollen and the breath fetid. In a case which terminates favorably the membrane in three or four days slowly loosens, and in about a fortnight after its appearance the patient slowly regains his health. But even in the mildest case there is danger, and the nurse should never for an instant relax her vigilant watching, and should be well versed in all the dangers accompanying this dreaded disease and ready to meet them.

There are four distinct dangers to be apprehended : blood poisoning, syncope (heart failure), asthenia (debility), and the filling up of the larynx with the membrane, causing death from suffocation.

The chief danger arises from blood poisoning. This type is sometimes termed nasal diphtheria. There is a fetid discharge from the nose and mouth, and often a thinner discharge of the same foul matter from the eyes and ears. Great care is necessary to keep this discharge well washed from the parts, using an antiseptic solution for the wash where it cannot be syringed away, or the patient's face will become very sore. In cases of this type that terminate fatally, the temperature falls, the extremities become cold, the skin clammy and very pale, the patient sinks into a stupor, gradually entering into complete coma, and dies from septic collapse in from two to five days. Before this

Not so infectious as scarlet fever.

Chief dangers in diphtheria.

stage begins there is often a very high temperature and active delirium.

For a patient who cannot assimilate the required amount of nourishment or one whose physique cannot endure the ravages of the disease, there is great danger of death from exhaustion. Even after the membrane has cleared away and the patient seems well on the road to convalescence, a collapse may occur, the pulse sinking sometimes below forty. Collapse.

When death occurs from suffocation the membrane extends into the trachea from the fauces. The patient in this case has great difficulty in breathing, the temperature increases, there is great restlessness, the features at last become livid, and if the trachea is not opened the patient dies. This operation is called tracheotomy. The instrument consists of two portions, an outside and an inside tube. The inside one should be removed frequently and thoroughly cleansed in an antiseptic solution; a chicken feather is the best implement for that purpose. Operation on the windpipe.

Diphtheria is contagious as long as there is the slightest discharge or membrane remaining. The patient should remain in quarantine *until both have entirely disappeared*. This period lasts from two to four weeks.

The sequelæ are paralysis, albuminuria, and ulcers. The ulcers heal very slowly, and are sometimes very deep-seated. Albumen in the urine and paralysis often appear early in the disease. The first symptom of the latter is the returning of the food through the nose. The more quiet a patient is kept the less danger will there be from paralysis, although there is generally more or less of it, sometimes extending to general paralysis. In any case, whether much or little paralysis follows, absolute quiet The sequelæ, or after-effects.

is necessary from the beginning of the disease until the end of the convalescent stage. If the nurse strictly enforces this rule she will greatly lessen the danger of sudden death, either from paralysis of the heart or collapse.

In this, more than in any other disease, does the life of the patient depend upon the nursing; not for one moment should the nurse cease to watch for the dangerous symptoms which she should be able to recognize at once, and until the doctor arrives, battle with them as their need requires, and in so doing it is often a battle against death itself. In case of collapse and exhaustion she should stimulate, apply warmth, and give nourishment, if not possible by the mouth, by the rectum, or it might be administered in both ways with advantage.

When there is danger of blood poisoning and the spreading of the membrane, the applications ordered—syringing or whatever they may be—should be attended to conscientiously every *ten or fifteen minutes* for hours, and perhaps for days. In all cases, however, absolute quiet and plenty of nourishment are most essential. The nurse should not accept the care of such a case unless she knows her endurance to be equal to the test. Although the disease is a dangerous one if contracted, if she is careful to carry out the rules for thorough disinfection, she rarely contracts it herself. An atomizer should be constantly working in the room.

Membranous croup is nursed in the same manner as diphtheria. There is very little difference between the diseases during their course, but membranous croup is not accompanied with the dangerous sequelæ of diphtheria.

CHAPTER IX.

TYPHOID FEVER.

There is no medical disease that is accompanied with so many changes through its course as typhoid fever, and in order to nurse the fever successfully the nurse should thoroughly familiarize herself with the symptoms and dangers connected with it. Typhoid fever.

There is generally indisposition (malaise) for from ten to fourteen days, except in the type called walking typhoid fever, when the patient remains up and around for three or four weeks; during a part of this time the fever is running its course. Incubation period.

The symptoms are irregular and varied: sometimes loss of appetite; loss of sleep—when present very marked; diarrhœa—sometimes constipation; epistaxis (nosebleed) generally present; the run of fever is usually twenty-one days, sometimes twenty-eight and occasionally fourteen days; delirium is usually present and varies from the mildest to the most active forms. Convalescence is from six to eight weeks. The dangers to be feared are hyperpyrexia (high temperature), hemorrhage from the bowels, and collapse. Typhoid symptoms.

The fever in typhoid commences at the start of the disease and lasts until the beginning of the convalescent stage. In cases that terminate favorably the temperature rarely rises above 104° and then easily responds to antipyretic

measures. In the worst cases, however, there is sometimes persistent hyperpyrexia, the temperature rising to 105° or over every evening; and if responding at all to sponging or other means ordered for reducing it, the effect lasts but a short time. The temperature may of its own accord begin to fall about midnight and reach 100° or even 99° by morning. In cases when the fall does *not* occur, the patient rarely recovers. No alarm is felt, however, if in course of the fever the temperature every evening rises to between 104° and 105°; this is to be expected; nevertheless the doctor will doubtless order sponging or medicine to keep the patient comfortable. The nurse should watch carefully that she may know just when to give what has been ordered. She should bear in mind that, in this fever above all others, cracked ice may be given *ad libitum*. It not only reduces the fever but also is good for the intestines, which are the parts most affected in typhoid; they are in fact, as a doctor once said, the "germ factory in typhoid fever." The quantity of water given should, of course, be under the direction of the attending physician.

Ointments are sometimes ordered to be rubbed thoroughly over the whole body to reduce the temperature. In that case, at the proper moment, the patient should be divested of all clothing, and after a sheet has been folded down the middle and laid under him, reaching from head to foot, the ointment should be liberally spread over the surface of the skin and rubbed in well; it should be done just as a sponge bath is given. Turn the patient on one side, and under cover—or exposing a small portion of the body at a time—rub the ointment on from the median line from the shoulder to the foot, then turn him, and when the other side has been attended to in like manner, he may be allowed to rest ten or fifteen

Reducing the
temperature
by the use of
ointments.

minutes. His temperature should then be taken and the bed re-arranged.

Whether other means for keeping the temperature within bounds are used or not, sponging is usually ordered *pro re nata*. The nurse should give the sponge just at the time the temperature is reaching its maximum point, which she can determine by observation—following the directions on page 23, for giving sponge baths. Except in cases of hyperpyrexia, the water should not be below 75° and in that case she should be advised by the physician. The bath should not last longer than twenty minutes, as the temperature of the body is apt to fall after sponging. The observations of temperature in typhoid fever should be “many and oft,” but they need be recorded only at stated intervals. The nurse cannot keep the proper run of her case unless she watches the temperature vigilantly; it should always be taken from thirty to forty-five minutes after the administration of an antipyretic, and recorded; it should also be recorded after sponging.

The morning and evening temperature corresponding in maximum and minimum points, clinical memoranda, and all details of treatment should be recorded on the chart in black ink, the intermediate temperature, pulse, and respiration being marked in red ink. This will make the chart distinct and the doctor's eye can at once take in the important points of the report. Under the head of “Clinical Memoranda,” the events of the day are reported. “Detail of Treatment” means anything that is ordered for transient pain; for instance—“severe pain in the abdomen,” should be placed under “Clinical Memoranda”; “a mustard plaster,” which is ordered for the pain, should be placed opposite it under “Detail of Treatment.” The regular treatment, such as whiskey and the usual nourish-

ment and medicines, should be placed under the name, age, etc.

The nurse should not allow her patient to study the chart or to keep track of his temperature or treatment, and by exerting a little tact she can prevent him from insisting upon knowing or even wanting to know all about himself.

When the fever is gone the temperature in the morning is apt to be subnormal. If it is below 98° hot bags should be applied and a stimulant given; if at any time it should continue to fall to 97° or below, it should at once be reported.

The greatest danger in typhoid fever is from hemorrhage of the bowels. As before mentioned, the seat of the disease is in the intestines, which become ulcerated, causing perforations. When the ulcers eat into an artery or bloodvessel, hemorrhage follows, which is almost always fatal, though there are cases which have been cured. When at any time the temperature suddenly falls from a febrile point to normal or below, the nurse may know that hemorrhage is imminent. She should at once report the circumstance, and in the mean time treat as in collapse, and, in addition to that treatment, the foot of the bed should immediately be raised eight or ten inches, and the pillow removed from under the patient's head. So, it should be remembered, the collapse is the precursor of perforation and hemorrhage, and is itself generally preceded by a chill.

During the whole course of the fever it is of the greatest importance to keep the patient quiet and in a horizontal position *horizontal position*. If there is violent delirium some one should be at the bedside every moment of the time, for if he should jump up suddenly and stand upon his feet, a hemorrhage might be the immediate consequence from sudden perforation. Only one small pillow

should be under the patient's head during the period of fever. He should be turned frequently and gently from side to side, thus avoiding a lung complication. Besides sponging frequently, the nurse should morning and evening carefully rub the spine, shoulder blades, ankles, and elbows, as explained in Chapter III.

In typhoid fever sordes collect on the teeth most persistently, which the nurse should carefully remove every morning, using glycerine and rosewater in equal quantities, or a weak solution of permanganate of potash with a few drops of tincture of myrrh. Toothpicks covered with small pieces of absorbent cotton are the best instruments for this purpose.

A relapse is very dangerous in this fever, and is most frequently brought on by the diet or by constipation.

The nurse should adhere closely to the doctor's orders in this respect ; he is not likely to order

Relapse in
typhoid fever.

any solid food until the temperature has been normal, evening as well as morning, for a week or more. Then it is necessary to see that no *hard substance*, such as a crust of toast or a seed from fruit, be swallowed by the patient. The vigorous building up of the wasted tissues causes great hunger, and while the nurse strictly obeys orders, yet in this stage of the illness that is so hard for the patient to bear, she should study to make the diet as varied as possible.

Although typhoid fever is not contagious, infection may be spread and the disease taken through the excreta ; yet if proper precautions are observed,

Manner of
disinfecting.

this danger can be entirely averted. The bedpan should always have about $\frac{3}{4}$ ii of 1-1000 bichloride in it, and immediately upon removal from the bed more should be poured into the pan. The patient, after each stool, should be carefully washed about the rectum with a solution of 1-4000

bichloride ; a sponge or cloth should not be used, but pieces of absorbent cotton which are burned immediately afterward. If at any time the sheet or night clothes be stained, they should be at once removed and immersed in boiling water.

CHAPTER X.

PNEUMONIA—PLEURISY—PHTHISIS.

Inflammation of the lungs, lung fever, and congestion of the lungs may all come under the head of pneumonia. The attack begins with a pronounced Pneumonia. chill and acute pain in one or both lungs. The chill is followed by fever, which generally reaches 104° , any increase above that indicating danger. The severity of the pain is dependent upon the amount of pleurisy connected with the attack. The pulse ranges from 120 to 140. Other symptoms are pain in the head, loss of appetite, thirst, easy and rapid respiration, and prostration. Delirium is generally present after the first twenty-four hours. At the outset of the attack there is usually no cough, but after twenty-four hours a cough begins.

The sputum at first is scanty, transparent, and viscid; it next assumes a reddish tint, and is called the Character of sputum. smoky or iron rust sputum; this color is due to a small amount of blood mixed with it. If suppuration starts in, the sputum turns muco-purulent and gradually changes to pus. If this occurs death usually takes place within a few days, but if it ends in recovery, many days and perhaps weeks elapse before the normal condition is restored. The cough and expectoration gradually increase, but the cough is less hard and the sputum easily coughed up. When the healing process is complete both cough and

expectoration cease. The shortest duration of this disease on record is five days, and the longest twenty-three days; this dates from the commencement of the attack to the time the patient is pronounced convalescent.

The patient should be placed in bed on the appearance of the first symptom—a chill. He will probably object to going to bed, but it is necessary that he should, as the first consideration is to insure absolute quiet.

The jacket poultice is commonly ordered for the chest, and is prepared in this way: Take two pieces of muslin reaching across the chest, back and front, to the waist line and extending well up around the neck, with holes cut for the arms and tapes sewed on the sides and top. Spread one piece with a poultice of boiled flaxseed meal, turn the patient over and lay it on the posterior chest; turn him back, spread the second piece and lay it on the anterior chest; then fasten along the sides and across the shoulders by tying the tapes. Another way is to make the jacket from the median line front and back, slipping first one side over the arm and then the other side and fastening the tapes down the middle of the front and back. In either case the jacket should be made in halves, and when renewed neither part should be removed until the fresh poultice is made and brought to the bedside. These poultices should be changed every four hours. Instead of poultices, hot applications are sometimes ordered and should be prepared as explained on page 36. In case of prostration the patient's position should be changed frequently—as often as every half hour. Cupping is sometimes ordered for the relief of pain; for reducing fever sponging is usually ordered, and may be administered without fear of increasing the pneumatic condition. The axiom that patients with fever do

not "catch cold," holds good in pneumonia. In favorable cases the fever falls to normal as suddenly as it arose, and this is the time for the nurse to see that her patient is in no danger of catching cold.

In all acute diseases the convalescent periods are similar, and the nurse has usually the same symptoms to contend with, such as severe pain in the limbs, restlessness, abnormal appetite, irritability, etc. It is her duty to make the patient as comfortable as possible, always keeping within the limits of her duty as a nurse.

An attack of pleurisy, or inflammation of the pleura, is usually very sudden, but pain is sometimes felt for a day or two at every breath taken, cough-
Symptoms
of pleurisy.
 ing, sneezing, and every movement of the body causing pain in the side. This pain leads to efforts to prevent coughing, which give rise to the suppressed cough so characteristic of pleurisy. The temperature rarely goes above 102° , except in very severe cases, when both sides are affected; it is higher on the affected side. In normal cases the pulse rarely rises above 110. Pleurisy is either dry or moist; in the latter case there is effusion of liquid in the pleural cavity; the absorption of this liquid—in cases that terminate favorably—commences a few days after it has reached its maximum point. If this liquid remains in the pleural cavity, the disease is termed chronic pleurisy. In many respects the care of pleurisy is like that of pneumonia.
Nursing of
pleurisy.
 The patient's position should often be changed;

it is impossible for him to lie on the affected side on account of the severe pain. Particular care should be observed in regard to his movements. The nurse should impress upon him the danger of any sudden movement, as it might result in heart failure. When there is much effusion, the organs—especially the heart—are often pushed out of place. In this

case a trocar is sometimes used to draw off the fluid. This instrument consists of a perforator and canula (a tube). A puncture is made in the chest, both perforator and canula entering the wound, after which the perforator is withdrawn; the canula remains and the fluid passes out through it. No dressing is required for the wound made by the instrument, but a piece of adhesive plaster should be laid over it.

Drawing off
fluid in case
of effusion.

During convalescence in this disease solid food, comprising all nutritious substances, is allowed soon after the acute stage is passed, because the rapid absorption of the fluid greatly depends upon the general condition of the patient.

Pneumo-thorax is a term denoting the presence of air without liquid, in the pleural cavity. In this case the pleurisy is not accompanied by effusion. This is a rare form of the disease.

Hydro-thorax is not a form of pleurisy, but is a dropsical affection in the pleura; it does not occur so often after pleurisy as it does after anasarca (general dropsy).

There are several forms of phthisis, but all terminate fatally, and all call for the most careful and sympathetic attention. The principal forms are: tubercular phthisis, which is generally hereditary, but may be developed by continually breathing bad air or by insufficient food or anything that lowers the vitality; pulmonary phthisis, generally beginning with an acute chest or throat affection; acute phthisis, commonly called "quick consumption," a rapid termination of either form of phthisis; fibroid phthisis, which is essentially a chronic form.

It is a recent theory that tubercular phthisis is contagious, that the disease may be developed by breathing the tubercular germ. It has been shown by scientific research that where an animal has had tubercular sputum injected

into its skin it has been known to die of that disease in three months.

In continuation of the subject of the contagion of phthisis, the rules for disinfection should be carefully carried out. The patient should not be allowed to spit around indiscriminately, because after the sputum dries, small particles from it fly about in the air, and the germs may then be inhaled and absorbed. The nurse should provide her patient with small pieces of old muslin about four inches square, in which to collect the sputum; these cloths should be placed in a vessel in which there is an anti-septic solution—permanganate of potash, or 1-1000 bichloride—and should afterward be burned. (Rolls of toilet paper are sometimes preferred.) There is no disease in which the nurse may be of so much use and comfort to her patient as in this. Every symptom connected with it causes more or less discomfort and pain, and by battling with each one as it appears, she can make the patient's life a much happier one.

In the early stages of all types of phthisis the patient should be urged to take as much exercise in the open air as possible. Rather have him go out in all weathers than keep him in at all times; it is best, however, to strike the happy medium by making a few rules. In case of a high wind and very cold weather, it is better to keep the patient indoors. In damp weather avoid early morning and evening air, choosing the middle of the day for exercise; the dampness will not usually harm the patient, unless he has bronchitis. Once or twice daily he should exercise his lungs while in the open air, thus: with mouth closed tightly, a full, deep, and slow inspiration should be taken, and the breath held a second; then with the mouth puckered as if for whistling, the air should be as slowly

Nursing of
phthisis.

Exercise.

blown from the lungs; this exercise should be repeated twelve or fifteen times.

The patient should wear light but warm clothing; silk or light woolen underwear should be worn all summer, heavier of the same sort in winter. All chest protectors should be avoided, as they make the chest perspire, rendering him more liable to catch cold.

The patient may eat underdone beef, all green vegetables, and plenty of milk and cream; if this latter article should prove to be constipating, it should be given only in the middle of the day. The detail of food for a phthisis case will be further explained in "Food for the Invalid."

The stimulants that the doctor orders, and hot drinks should be given at the time of day when the temperature is lowest, which is from midnight until 9:00 or 10:00 a. m. During that period the patient should be kept very quiet. When he is much distressed with coughing, hot applications to the chest and a hot drink will afford relief. After noon the temperature begins to rise, and by 8:00 p. m. it sometimes reaches 104° or 105°. At the time the temperature is highest, the nurse should give cooling drinks and bathe with alcohol and water if it is desired. In a case of hemoptysis (hemorrhage) the patient should be placed in a semi-recubent position. Ice may be applied to the chest, small bits of it may be swallowed, and inhalations of turpentine given. In the last stages of phthisis the pulse is very high, and delirium is often active.

The nurse should be very careful to allow no bedsores to form, as often in this disease the patient becomes painfully thin. In the event of night sweats she should change his clothing two or three times while the sweat lasts, and rub the skin with a soft towel, first using alcohol and

lukewarm water in equal parts. In the last stages there will be œdema (swelling) of the legs ; as long as the patient is able to be up and around the room, the nurse should be careful to place an ottoman or chair under his legs when he is sitting. For attacks of dyspnœa (difficulty in breathing), inhalations of aromatic spirits of ammonia will often give relief.

Hemorrhage from the lungs is brought on in three ways : first by over-exerting the heart, by over-exercising, or by breathing too rarified air, as in ascending a mountain ; second, it may be occasioned by organic disease of the heart, as in aneurism, or by tubercular disease of the lungs ; third, it may be dependent upon trouble elsewhere, as stoppage of menstrual flow, etc.

Different kinds
of hemorrhages.

The symptoms of hemorrhage from the lungs are the spitting of blood and shortness of breath. The spitting may last for a day or two or for weeks, and then cease, or after the spitting, the hemorrhage may amount to a pint in a few hours. Sometimes a large hemorrhage occurs at once, without any previous warning. It is very seldom that a patient dies during a hemorrhage ; it is serious only as regards the consequence, the effect it has upon the lung structure. The character of the blood from the lungs is red and frothy, unclotted and unmixed with food. In hemorrhage from the lungs absolute rest should be observed ; the patient should neither speak nor move. The doctor will probably order counter-irritants and perhaps doses of ergot.

When the hemorrhage is from the stomach (hematemesis), the blood is black, resembling coffee grounds. Nausea is felt, but there is no effort to cough, no oppression in breathing, and some food is usually mixed with the blood.

When a patient begins to spit blood it is better to give only cold food, or food very slightly warmed, thus keeping down

the circulation and the heart's action. The more active the hemorrhage the stronger the pulse will be. As before mentioned, ice may be applied to the chest and spine. After a severe hemorrhage the patient should be kept very quiet for a day or two.

CHAPTER XI.

ANTISEPTICS—HEMOSTATICS.

ALTHOUGH touched upon in the introductory chapters, it will not be amiss to repeat here, that the "day of small things" in the profession of nursing must not be ignored. Especially is it true in regard to the branch treated of in the following pages, namely : surgical nursing.

The first subject discussed will be the principles of antiseptics, the whole secret of whose success Antiseptics. lies in the *absolute* knowledge and appreciation of *all* the principles of septic as well as aseptic and antiseptic surgery, added to the everyday application of the minutest rules appertaining to each of them, from the care of a suppurating finger to that of a laparotomy case ; including also the most perfect care of every instrument used, the proper attention to the attendant's finger-nails and the skin of the patient over the part to be operated upon. This knowledge, together with the necessary "care" and use of "good judgment," is called by surgeons "the obligation." Without the same qualifications required in the surgeon, the nurse is unfit to attend, and has no right to accept the care of an antiseptic surgical case, however slight.

After any injury attended by the breaking of the skin, and after all wounds, whether accidental or Germes, microbes, etc. made by the surgeon, the patient is in danger of incurring any of the following conditions : hectic fever, pro-

fuse suppuration in form of abscess, erysipelas, gangrene, septicæmia, etc. Before the value of antiseptic treatment was known these abnormal conditions very often proved fatal; many lives in war times would have been saved, had antiseptic surgery been known and practiced. The septic conditions occurring after surgical wounds are due to the presence of bodies, so minute that they are invisible without the use of the microscope. These tiny bodies are alive and are very industrious in destroying human life when a good chance is given them. They are called by various names: micro-organisms, germs, bacteria, etc. Then there are numerous forms of bacteria: micro-cocci, crescent-shaped, etc.; the bacteriologist names them according to the disease they create.

The one aim, therefore, of antiseptics is to destroy these micro-organisms, wherever and under whatever condition they may be discovered. The fundamental principles remain the same, but the details in carrying out these principles differ greatly and frequently change. Every surgeon entertains and carries out his own ideas in regard to them, and the nurse should always listen attentively and follow out to the letter his directions, whatever they may be. The true nurse—however experienced—will be utterly incapable of drawing comparisons between the differences of practice and use of antiseptics by different surgeons. If she is not capable of holding her *mind* as well as her tongue, she is alike incapable of proving a help to her patients or a blessing to her profession.

When a bone is broken at one place or more even if splintered at these points, if the skin is not broken, and there is no injury to the organs in proximity to the wounded parts, the healing of the fracture or fractures will probably

run a smooth course. There will be no suppuration, and the patient will not be seriously affected.

But the same amount of bone injury accompanied by a breaking of the skin is another matter, and may prove serious, especially if no antiseptic precautions are taken. Suppuration may set in, prolonged illness for months may follow, sometimes accompanied by one or more of the above mentioned septic conditions. In ordinary wounds accompanied by a bruise there is usually no suppuration; but if the skin is broken, which causes more or less laceration of the fascia around the wound, there will be a free discharge of pus from the abscess formed. The presence of micro-organisms in the air is the cause of decomposition in an open wound. These bodies entering the wound cause blood poisoning by producing any one of the conditions mentioned above, all of which may be prevented by the thorough use of antiseptics. The impregnated air passing through the antiseptic dressings and fluids is filtered, and the micro-organisms cannot reach the wound. Any carelessness on the part of the nurse may endanger the life of her patient: as using a sponge that has ever before been used, or a perfectly new one without proper antiseptic preparation; or the use of instruments after they have touched anything not aseptic, as the floor, the bed, the patient's or surgeon's clothing; or the insertion of a septic finger into the wound.

Besides the microbes that are invisible without the aid of the lens, there exist other germs that are just as fatal to human life as the atom, namely, those existing in every grain of dust, in every minute accumulation of stale animal or vegetable matter wherever it may be, on window sills, the backs of picture frames, or around the edge of slop pails, in soiled linen or carpet,—in fact in any and all crevices,

large or small, wherever dirt of any sort can enter. If the nurse conscientiously brings into her everyday work the principles of antiseptics she will realize that she enters upon a never-ending warfare for the extinction of dirt.

The nurse should thoroughly familiarize herself with the situation and functions of the heart and blood-vessels as explained in the chapters on "General Nursing." Points referring especially to that part of the circulation relating to the suppression of hemorrhage will be mentioned here. The arteries are found in nearly all parts of the body and are most numerous and largest in the extremities; they are more deep-seated than the veins and are placed at the inner side of the limbs where they are safer from injury. The blood from a severed artery is bright red, and comes in *spurts and jets* corresponding to the beats of the heart; the walls of an artery remain open when severed. The veins are found in nearly every tissue in the body; the walls are thinner than those of the arteries and collapse when empty. From a severed vein the blood flows in a *steady stream*, and is much darker than that from an artery. The blood from the capillaries wells up.

It is rather difficult to classify the different modes of suppressing hemorrhage, which should be as simple as possible, on account of the necessity of remembering them for practical application in emergency cases.

There are three ways in which nature herself arrests the flow: first by a "clot." When there has been great loss of blood, the circulation becomes weaker, the diminution of the heart's action lessens the flow, and a clot is formed at the opening of the wound, whereupon the patient faints. Unless the nurse uses other means to stop the bleeding until the doctor arrives,

Suppression
of hemor-
rhage.

Natural sup-
pression of
hemorrhage.

she would better not try to increase the strength of the patient by "bringing him to" by the aid of stimulants, for by so doing the clot will be *pushed out* by the renewed strength of the circulation, and the hemorrhage started again. Each recurrence of this state of affairs is more dangerous than the one before. The temperature will fall, first in the extremities; the skin becomes clammy and cold; the patient becomes restless and throws the arms about; dizziness in the head, and partial or complete loss of consciousness follow. But if the nurse is able to suppress the hemorrhage by other means, she may then devote herself to reviving her patient, treating as in case of syncope.

The second method is by "retraction," a change occurring around the bloodvessels, the *elastic* coat of the vessel shortening. The third is by "contraction"; the *muscular* coat of the vessel contracts. Both of these conditions serve to lessen the flow of blood.

Second and third natural suppressions of hemorrhage.

The remaining hemostatics may be divided into three classes, the vital, the chemical vital, and the mechanical. The vital remedies are both external and internal, and act both locally and internally. The chemical vital remedies act locally only. The mechanical hemostatics (as the name implies) consist of all mechanical means for suppressing hemorrhage, as the bandage, tourniquet, actual cautery, etc.

Division of hemostatics.

The most important external vital hemostatics are heat and cold, both of which may be moist or dry.

Moist cold consists of patent lint dipped in cold water, sponging with cold water, the use of the irrigator, which consists of a fine spray of cold water thrown over the bleeding part. It

Description and uses of the means for suppression of hemorrhage.

includes also the ice pack, compresses wrung from ice water,

local ice baths, full or partial sponge baths, etc. Dry cold consists of the application of the ice cap, of passing cold water through a rubber tube, the dry ice pack, etc.

It is not well to use cold in the case of aged persons, as gangrene may result, or in the case of debility or imperfect circulation from any cause. In all cases where shock is imminent cold applications should be avoided ; in case however of youth, strength, and robust health, the use of cold may be not only more agreeable but also more efficacious than heat, and its application may cause speedy and permanent reaction.

The applications of heat—moist and dry—are even more numerous than those of cold. Sinipisms, cataplasms, hot, wet, and dry packs, cautery, massage,—all these it is the privilege of the nurse to use with the necessary discrimination. In abdominal sections, gunshot wounds, stabs, etc., the application of heat is preferable to cold ; it acts as an antiseptic by killing the germs, arrests the hemorrhage, and prevents a shock.

It cannot be repeated too often, as a reminder to the emergency nurse, that she should be very particular in the use of cold as a styptic ; when used, the patient should be watched carefully that a chill may not be the result.

A good external vital remedy is a mixture of alcohol and water in equal parts ; it is a wash for wounds, and serves to contract the walls of the bloodvessels, favors the formation of a clot, and acts as a styptic. The application of turpentine is also a good local styptic, with much the same result as that of alcohol. It favors retraction and the formation of a clot.

Internal vital hemostatics : Oil of turpentine acts as well internally as locally, but is apt to occasion vesical irritability, and also cause strangury or retention of urine.

It is frequently given for rupture of the small intestine and hemorrhage of the bowels, in doses of from ten to twenty grains, every three or four hours. Internal vital hemostatics. Oil of erigeron acts much like turpentine, causing irritability of the stomach and nausea ; it is more likely to be retained when given in capsules. Acetate of lead has also the same effect. Three to five grains are the usual doses given in powder. These are all hematics and are at once absorbed by the blood. Aromatic sulphuric acid is especially good. The dose ordered for a styptic is usually from ten to twenty grains ; it must however be well diluted or it will cause severe irritation.

The nurse in reading the foregoing medicines will of course remember, that although the doses and their effects are given, yet under no conceivable circumstance may she administer any of them unless ordered by the physician. From the explanations of the medicines used as styptics, she may familiarize herself with the dose, action, and effect of each of them, so that if ordered she will understand how to administer them, and also what effect they will produce.

The chemical vital hemostatics are usually external applications ; a few of the milder remedies are occasionally given internally. They favor co- Chemical vital hemostatics. agulation, and act upon the tissues and walls surrounding the bloodvessels. They consist of the following : tannic acid, dusted freely over the part or made into a paste ; gallic acid, given internally as well as applied externally ; alum, a saturated solution in tepid water, poured over the bleeding part where it crystallizes ; iron salts, "Monsel's solution," is good for troublesome leech-bites and is given sometimes internally—the maximum dose ten grains. Nitrate of silver is used for hemorrhage from

small wounds and leech-bites. A cobweb favors coagulation and is used for capillary hemorrhage.

The mechanical hemostatics consist of the following methods: The Esmarch bandage is a rubber bandage used by surgeons to prevent loss of blood during operations; it is generally applied while the anæsthetic is being administered. It is applied very tightly and with uniform firmness to a portion of the limb *above* the part to be operated upon. Where the bandage ends, a rubber tubing, well stretched, is wound four or five times around the limb. One end of the tube is fastened to the other by a small clasp; the rubber bandage beneath is then removed beginning at the turn last taken. The tubing so thoroughly compresses the veins and arteries that not a drop of blood is lost during the operation.

When elastic rings are used a ring is selected suited to the part to be operated upon, and is rolled slowly from the extremity to a point above the place of operation. Rings used for the thigh and leg, arm and forearm, should fit the ankle and wrist snugly. They are often used to prevent septic fluids and bits of necrosed bone from entering the circulation.

The tourniquet has two modifications. Its usual application, however, is as follows: Several turns of a roller bandage are made around the limb terminating at the point where the instrument is to be applied. The cylinder of the roller is here placed over the artery for a compress and the tourniquet applied; the screw should not be placed *over* the cylinder—for then the rollers would be likely to slip when the screw was worked—but it should be placed at the side of the limb, the strap buckled tightly, and the screw gently turned to the necessary tightness. The tourniquet may be used to compress the venous circulation

only or both the venous and arterial. It is especially adapted for compressing the abdominal and thoracic aorta and the femoral arteries.

Ligation is the favorite method of binding cut vessels to control bleeding during and after operations.

Ligation.

When the surgeon uses a wire ligature, it is removed when the wound no longer requires it; this is called the irritating ligature. The non-irritating ligature is made of catgut and after having been rendered aseptic, is allowed to absorb with the healing of the wound.

Torsion is the twisting of an artery upon its axis, which causes the laceration of the inner coats; they then form a mesh in the vessel causing a clot; the outer twisted coat remains as a protection and support. This is used by surgeons for small arteries; it is not considered reliable for the large ones.

Torsion.

Acupressure is compression of the artery in the wound by means of a needle. This is accomplished in several ways: by direct compression, the needle pressing the artery against the muscle upon which it lies; by compression with wire, by passing the needle under the artery, then casting over and in front of it a loop of wire which is tightly fastened to the shaft of the needle; the needle is then passed through the opposite flap. The time for the removal of the needle should not exceed forty-eight hours,—a much shorter time has been found sufficient.

Acupressure.

The cautery, used for deep-seated hemorrhage, was the only means known in the past for the suppression of hemorrhage. At the present day it is generally used in connection with the battery. The thermocautery is an ingenious invention of M. Paquelin and is in general use.

Cautery.

Flexion is used to control hemorrhage from the extremities. Elevate the leg or arm to its fullest extent in wounds about the hands or feet; this position, however, can be retained but a short time, as it grows extremely painful; extreme flexion of the hands and feet will arrest the hemorrhage.

Hemorrhage may be controlled by compression of the artery which supplies the part. The loss of the blood may be lessened considerably by elevating the limb immediately and rubbing from the toes to the thigh or from the fingers to the shoulder in an upward direction.

A garrot is a small stick used for the purpose of tightening a bandage. Tie a firm knot in the middle of a handkerchief or strip of cloth, place the knot directly over the artery, tie the cloth, insert the stick under it and then twist it until the bleeding is arrested.

Digital compression (pressure of a finger) of a *venous* hemorrhage should be made on the side of the wound away from the heart (distal side). Digital compression of an *arterial* hemorrhage should be made on the side of the wound nearest the heart (the proximal side). If in the case of a deep-seated artery, the finger proves to be insufficient, a key, with the ring strongly padded, pressed firmly on the artery, will arrest the hemorrhage.

Hemorrhage from the lips may be controlled by pressure on the coronary arteries which are lodged in the mucous membrane of the mouth. The pulsation of these arteries can be felt quite plainly at the corners of the mouth.

The pulsation of the temporal artery may be felt above the zygomatic arch directly in front of the ear. This is a good point for the observation of the pulse. The temporal bone gives a good point of resistance for controlling hemo-

rhage from the temporal artery. The facial artery ascends from under the lower jaw, over the anterior surface of the masseter muscle and across the cheek to the eye. Its pulsation can be felt at the anterior superior portion of the malar. The clavicle marks the boundary line between the chest and neck; directly above it is a small depression, the supra-clavicular fossa, where the pulsation for the subclavian artery may be felt. The subclavian artery rises from the arch of the aorta and passes down under the first rib to the armpit or axillary space, which is situated at the inner side of the arm, at the top and side of the chest. The pulsation of the axillary artery may be felt by raising the arm and pressing the finger in the axillary space against the head of the humerus. The artery continues down along the inner side of the arm, where it takes the name of the brachial artery. Its pulsation may be felt by pressing anywhere along a line drawn from the middle third of the axilla to about the middle of the bend of the elbow. Below this bend, the artery divides into two branches, termed the radial and ulnar arteries. The ulnar is the largest division of the brachial artery, and lies in the inner side of the forearm. The radial artery is a more direct continuation of the brachial artery. The pulsation of both ulnar and radial arteries may be felt at a point just above the wrist joint; the radial artery however is the accepted point for observing the pulse. These arteries pass still farther down into the palm of the hand where they form two great vessels, the deep and superficial palmar arches; these arteries divide and subdivide again, supplying the phalanges with bloodvessels. By extending the thumb out until it forms a right angle with the hand, a line drawn across the hand from the inferior border of the thumb will show the position of the superficial palmar arch,

Pulsation of
the different
arteries.

which is the continuation of the ulnar artery. The deep palmar arch is about an inch nearer the wrist and is a continuation of the radial artery. The pulsation of the abdominal aorta may be felt by pressing firmly against the spine an inch below the umbilicus and a little toward the left; it here divides into two branches, the external and internal iliac arteries. As it passes down the inner side of the thigh it becomes the femoral artery, the pulsation of which may be felt by pressing against the thigh about the middle of the fold of the groin, which lies between the thigh and the abdomen. At the back of the knee there is a space—corresponding to the axillary space at the junction of the arm and shoulder—called the popliteal space. The great branch of the artery takes the name of the popliteal artery at the junction of the middle and lower third of the thigh. Passing through the popliteal space it divides into the anterior and posterior tibial arteries; their upper portion is deep-seated. The pulsation of the anterior tibial artery can be felt on the anterior surface of the leg between the two *malleoli*; the pulsation of the posterior tibial artery is felt midway between the inner *malleolus* and *tendo Achillis*. The lesser arteries supply the foot and the hand.

CHAPTER XII.

THE SURGICAL OPERATION.

Before explaining in detail the various points connected with a surgical operation, a list of the antiseptics in general use will be given, with the usual formulæ for preparing the different solutions :

Bichloride of mercury, binoxide of iodine, carbolic acid nitrate of silver, alcohol (absolute), salicylic acid, permanganate of potash, chlorine water, hydrogen peroxide, boracic acid, iodol, iodoform, eucalyptol, thymol, aristol, oil of turpentine, creolin, chloride of lime, chlorinated soda, creosote (from birchwood), aseptol, listerine, balsam of Peru, oil of cade, terebene, boiling water, and boiled water cooled.

The nurse will soon discover that surgeons differ greatly regarding the use as well as the strength of antiseptic solutions. Before preparing for the operation she should obtain explicit directions from the operating surgeon concerning the kind and strength of the solutions he wishes to use, and then follow his directions to the letter. Of late years boiled water—hot and cold—has been more used than the other antiseptics, particularly for the incision. For the sponges, instruments, and for making aseptic the operation room, other and stronger antiseptics are generally

used. For the instruments 1-40 carbolic acid is the ordinary strength ; to make this solution 1-20, or five per cent, take of carbolic acid \mathfrak{z} ii and of water \mathfrak{z} v.

Preparing
antiseptic so-
lutions.

To make of this the 1-40 solution the nurse should obviously double the quantity of water, and so for a yet stronger solution than 1-20 she should increase the carbolic acid. As this solution is used freely in any and all cases, she should have a plentiful supply on hand ; two two-quart bottles should be prepared so that when one is emptied, the other will be ready.

The exact formula of the bichloride solution is as follows : To make a solution of 1-1000, take one grain of bichloride to from two to five grains of chloride of sodium (common salt), dissolve in two and one twelfth ounces of distilled water. This formula may be increased and decreased in the same manner as the carbolic acid solution. It is however practically of very little use to the nurse, for she will probably never be in the situation that will necessitate making this solution from the bichloride stronger. Bichloride, although a most effective antiseptic, is likewise a most deadly poison, and the nurse should have it made up in such a manner that she may be able to distinguish it immediately from all other medicines, should it happen at any time to be mislaid. There are two ways of obtaining the bichloride. Bottles of small pellets can be bought of any wholesale druggist ; one pellet dissolved in a pint of water makes the solution of 1-1000. The nurse can ask the physician to write a prescription in which one drachm of the solution added to one pint of water will make 1-1000.

All poisonous antiseptics should be plainly and frequently labeled with the " Poison " label as well as one " For external use." All medicines used externally as well as powders and ointments should be marked

in the same way. All possible means, however trivial, in the preparation for an operation and the care afterward, tend to prevent risk, and any neglect of the smallest detail in carrying out the principle of antiseptics, incurs dangers that the greatest brilliancy of execution cannot withstand, and it is upon the intelligent management of the case after the operation that the issue depends.

Necessity of
observing
detail.

The selection of the place for performing the operation is the first consideration. The hospital is for reasons obvious to physicians and nurses the only safe place for all operations, and there is every reason to think that before the beginning of another century tales of the "black drops," "Sairy Gamps," and "valleys of bones" in the cellar of that dread place, the hospital, will be things of the past. In the near future it will be considered the only sensible course to remove a patient to a hospital, not only for an operation, but at the onset of a fever or any other medical or surgical case serious enough to require the visits of a physician and the care of a nurse. Until the world generally has become sensible enough to appreciate its blessings in this respect, physicians and nurses will be compelled to use their combined ingenuity in fulfilling the requirements demanded of them by the aseptic principles. Until then it will be necessary to utilize physicians' offices and private rooms, trusting to the temporary inactivity of the germ from the copious use of strong antiseptic solutions before and during the operation.

The place.

The operating room in hospitals usually has a northern exposure. It contains no unnecessary furniture, simply the operating table, several small tables, plenty of shelves for supplies protected by glass doors, as few chairs as possible, and no carpet or curtains; the floor is

The room.

hard with glazed surface; the walls and ceiling, non-absorbent. In a private dwelling the room should be arranged like that in a hospital as far as practicable. For further details concerning the operation room see chapter on "The Nurse in the Hospital."

The preparation of the room for different kinds of surgical work, differs but little in the main, as every operation, whether a laparotomy for a gunshot wound or an amputation of a lacerated finger, should be conducted with equally aseptic precaution. The paraphernalia requisite for a laparotomy will cover the ground for almost any surgical case, excepting the change of instruments, sponges, bandages, etc. The nurse, bearing in mind the important point that every atom of dust contains a mortal enemy to the success of the operation, should first see that the walls, floor, woodwork—in fact every spot in the room—is made perfectly aseptic by a thorough washing with a 1-1000 solution of bichloride; after sweeping and dusting the room thoroughly and closing doors and windows tightly, she can begin her preparation for the operation.

Although anæsthesia is the first recognized stage of the operation, and the surgeon is held responsible for the selection and administration of the proper agent, yet at times emergencies occur that compel him to ask the nurse to relieve him for the time of the administration of the ether.

Cocaine is a good *local* anæsthetic. The solutions should not be too strong, as it is a powerful drug. A two per cent to four per cent solution is sufficient to paralyze the tissue at the point to be operated upon. It is brushed on a mucous membrane or injected under the skin with a hypodermic syringe. Ten minutes is about the

time required for it properly to affect the cuticle and the superficial fascia beneath. Ice and salt, and a spray of ether are common local anæsthetics, also carbolic and nitric (dilute) acids.

Nitrous oxide is the laughing gas used in dentistry ; for complete anæsthesia seven or eight gallons of it are required, taking effect in two or three minutes and passing off as quickly.

Nitrous
oxide.

Bromide of ethyl gives almost total anæsthesia, but only partial unconsciousness. It is used chiefly in obstetrics.

Bromide of
ethyl.

For all serious or prolonged operations, ether or a mixture of ether (sulphuric ether) and chloroform is the anæsthetic generally conceded by the surgeons to be the best and most effective, yet at times it may be extremely slow in its effect upon the patient. Intervals of excitement—laughing, singing, crying, etc.—may occur before anæsthesia is complete. Sometimes a large quantity is used before any effect is obtained ; this may be caused by the excessive nervousness of the patient or mismanagement in the use of the anæsthetic. In the administration of ether there must be a certain degree of concentration ; it is better therefore to use one of the regular made ether cones. The simple cone, however, made of a towel is very good, and is made as follows : Select a stiff towel evenly folded ; in order to retain the stiffness needed it should be a comparatively new one of ordinary size, and the folds not changed. Unfold until its dimensions are about eight by ten inches, then turn it into the shape of a cornucopia, fastening it along the side with strong pins. A cone thus made fits the face admirably, and the thick layers of toweling hold the ether well ; the texture of the towel prevents too free a dilution of the ether by the air. It is

Ether.

Making an
ether cone.

well to have two or three of these cones in readiness for they are likely to become saturated with ether, when they collapse and become useless.

Among the accidents and complications liable to occur is
 Narcosis. narcosis (the effect of narcotics) which occurs in
 different degrees, termed slight and profound
 or partial and complete. Apnoea (absence of respiration) is
 Apnoea. another accident and its treatment is artificial
 respiration. In case of a bleeding bloodvessel it
 is caught up by the assistant surgeon with a *tenaculum* (a
 fine hook).

A very dangerous feature of an operation is the shock,
 Shock. which may occur while in the surgeon's hands
 or soon after the operation. It is paralysis of
 the nerve centers, and this reflex disturbance is very serious,
 particularly because it comes when least expected and with-
 out warning.

In case of syncope, or fainting, the patient may be treated
 Syncope. as in the early stage of collapse. These attacks
 differ in degree and duration, and if not attended
 to properly will result in total collapse, which is very serious,
 usually terminating fatally.

The part of the tissue touched by the instrument in
 Principles of making an incision causes for a time a condi-
 dressing. tion of suspended vital activity of that part, be-
 cause the normal condition of the blood and its living solids
 is changed. One of the most important factors in the
 successful healing of a wound is the proper discrimination
 used in the management of the dressing.

Position of After the operation, the surgeon will be par-
 edges of in- ticular to place the two edges of the wound in
 cision. juxtaposition; this he does by means of the
 ligature. The tissues then, if free from any disturbing

cause, very soon recover their usual power by means of their inherent vital energy.

The successful healing of the wound must be effected by such means as will relieve it of every particle of foreign matter, every minute shred of dead tissue that may adhere to the cut surfaces ; protecting it also with the properly prepared dressings so that no germs can enter. The healing will be accelerated by careful attention to the following four conditions: the cleansing of the wound, its drainage and dressings, and the position of the patient.

First comes the cleansing, which consists of the free use of antiseptics throughout the operation ; this is followed by sponging, irrigating, or the constant use of the spray.

Second, the drainage tube after being rendered aseptic is inserted in the wound. The constant drainage through this takes from the wound the serum which would cause putrefaction and eventually inflammation. Horsehair and catgut were previously used for drainage, but the tube of perforated rubber is acknowledged to be less irritating than any other known drainage.

Third, the dressings are important. Of these, for the incision, the "Lister dressing" is in more general use than any other. Everything used for it throughout the treatment as well as for the operation itself must be rendered thoroughly aseptic with the solution ordered by the surgeon. If the spray is not constantly applied the surgeon will wash the cavity with boiled water at about 100° when the last stitch is taken. The sutures are made aseptic by the manufacturers, the silk is carbolized, the catgut chromatinized, and the sponges, also, may be obtained prepared aseptically.

The formula of the Lister dressing is as follows : First, over the stitches is laid the silk protective, extending a little beyond the incision. If a drainage tube is in the incision the protective is cut at intervals that the tube may extend through it and also that the serum may escape. The antiseptic solution used for the incision is never as strong as that used for the sponges and instruments ; if bichloride, 1-1000 or 1-2000, or carbolic acid, 1-20 or 1-30, were applied to the raw surfaces of the incision, the acid would act upon the edges, and cicatrization (the process of healing) would be retarded. For the same reason the protective is used over the incision—the bichloride gauze might be injurious to the cicatrizing edges. Over the protective are then placed eight layers of the antiseptic gauze large enough to cover the wound and the adjacent parts. This first dressing should be wet with an antiseptic solution ; it is in contact with the air while dry and if it should be so applied active septic particles might be secreted in the gauze and enter the wound. Surgeons sometimes prefer sixteen, sometimes as many as thirty-two layers of gauze for the wet dressing. Next comes the dry gauze of which eight or sixteen layers are used. Between the two layers nearest the wound a piece of pink mackintosh is placed, the rubber side next the wound. The reason for using the mackintosh is that it causes the serum to take a circuitous route before reaching the air ; if it flowed in a direct course from the wound to the air, septic particles could easily find their way to the incision. Large pieces of antiseptic cotton are laid over the gauze entirely covering it. Last of all the bandage or binder is applied. If no symptom of fever intervenes and no tympanites,

The silk protective.

The wet dressing.

The dry dressing and mackintosh.

Cotton dressing.

Bandage.

the surgeon does not disturb the dressing for some days.

Throughout the operation the position of the patient should be such as to favor the escape of the serum from the wound and to relieve it of all weight and pressure as well as to favor the free circulation of the blood. Placing the wound thus in a position of perfect rest aids the growth and repair of the tissue.

When divided tissues are brought into perfect apposition by good surgery and shielded from disturbance by the proper antiseptic dressings, the new tissue connecting the separated surfaces will appear remarkably soon. Although small to the naked eye, it is quite sufficient to accomplish what is termed primary adhesion, or union by first intention. This is exemplified by the rapid healing of a simple incised wound, where in two days, or sooner in cases where the blood is pure, a dressing is no longer necessary. When any of the conditions requisite to the healing of the wound by first intention are wanting, modifications of this perfect type of healing take place. These are termed by surgeons defects of apposition, of protection, and of nutrition.

The joining of divided surfaces may be prevented by want of coaptation, the bringing together of the separated surfaces ; retention ; the absence of the necessary dressing ; the peculiar character of the wound—if there is great loss of substance or a large surface which must be built up with new tissue ; the accumulation of decayed tissue, serum, and coagulated blood between the divided surfaces.

Owing to the lack of means to protect the wound, it is constantly open and exposed to increased irritation. The causes of irritation are as follows : motion, which prevents the surfaces from adhering ; mechanical irritants, consisting of friction, rude and im-

Position of
the patient.

The healing
of wounds.

Primary ad-
hesion.

Defects of pro-
tection.

proper handling, by which foreign particles are allowed to remain in the wound ; chemical irritants, decomposition of secretions retained and of dead tissue ; infection by germs which enter the wound from the air.

Defects of nutrition are due to general and local causes :
Defects of the general, or constitutional, defects which
nutrition. prevent rapid healing of wounds ; and the local causes, the injuries of the surrounding organs.

When the surface of the injury is large and the wound deep, the space is gradually filled up by cell-
Healing by granulation. germination ; after this takes place there will be seen all over the wound, numerous bright red granular eminences. These are called granulations and the new tissue is called granulation-tissue.

When the surfaces are granulating well, and the surgeon brings the surfaces together, prompt adhesion
Secondary adhesion. between them takes place. This is union by secondary adhesion, or by third intention.

Healing by scabbing occurs when the serum and blood dry off rapidly and form a hard crust thus pro-
Healing by scabbing. tecting the granulation-tissue. As the new tissue spreads, the scab becomes smaller.

CHAPTER XIII.

BANDAGES.

Bandaging is a science as well as an art, but it is only the *art* that lies within the province of the nurse, the *science* belongs to the surgeon. The nurse should never accept the responsibility of bandaging any part, until the wound or fracture is so far healed that there is no danger of any complication occurring should the bandage not be properly adjusted. But in case of accidents and emergencies, for ordinary dressings she should know which is the best and neatest bandage to apply, and which will be most comfortable for the patient. The art lies in her tact and adaptability; she should be able to utilize whatever may come to her hand when the proper bandages cannot be procured. Handkerchiefs, pieces of cloth or flannel, and even crash may be at times most acceptable, and will do very well in an emergency.

Only so much of scientific bandaging will be explained here as will be of use to the nurse when aiding the physician, and those simpler bandages which she may apply to dressings; even these she should study carefully that she may realize how important it is that they be properly applied, and that she may know the danger which may result from careless dressing.

A wound—however insignificant—if it require a dressing at all, will feel very uncomfortable, besides looking untidy, if it is not properly bandaged. There is, moreover, danger of blood poisoning if the skin is broken; for an illy-applied bandage is apt to pull the dressing aside, thus leaving the wound exposed to the germs in the atmosphere, and these active little marauders lose no time in entering and making mischief. To adjust a bandage *evenly* is very important, for if space is left between the turns or below the commencement of the bandage, the circulation will be impeded and the part become swelled and painful. All kinds of bandaging that are useful for accidents the nurse should practice again and again until she has them “at her finger ends.” When once thoroughly understood they are not easily forgotten.

The length and width of the bandage should of course be varied according to the position of the wound. For the ribs and thigh a bandage eight yards long and three or four inches wide is required; for the leg it should be seven yards long and three or four inches wide; for the hand, arm, and foot, six yards long and two or two and one half inches wide; and for the finger, four yards long and one or one and one half inches wide. A bandage for a child under ten years of age should be made just half as large as for an adult.

The best material for the roller bandage is ordinary unbleached muslin, which can be clipped with the scissors the required width, allowing one eighth of an inch for raveling, and then torn the required length.

The best way to roll a bandage is with a little wooden machine, which can be easily procured. If rolled by hand one of the two following ways is best:

Danger from careless bandaging.

Length and width of bandage.

Material for bandages.

Methods of rolling bandages.

To roll by hand, fold the end of the bandage upon itself three or four times; then roll until the center becomes so firm as to resist pressure on the end. Then holding it between the thumb and forefinger of the left hand (No. 1), cause it to turn upon its long axis by means of the thumb and fingers of the right hand.

For the second method an assistant is needed, who, standing some distance from the nurse, holds the bandage



No. 1.

smoothly, allowing it to slip along through her fingers.

Bandages are generally ordered to be applied tightly, moderately, or loosely. The difference between the three ways can be estimated thus: Tension of a bandage.

A bandage applied tightly will make a healthy hand throb; applied moderately it feels like a well-fitting glove; applied loosely it feels as does a comfortable compress on the eye.

As the circumference of the part to be bandaged increases, more force is necessary to produce a given tension. Thus in bandaging the limbs where one turn covers a greater circumference than the preceding one, it should be drawn a little more firmly. The amount of force

required to give the desired tension to the bandage depends largely upon the kind of dressing used ; the thinner the dressing is, the less force will be necessary. To double the tension at any point it is necessary only to make one additional turn. There is therefore danger of too much tension at the point where the first turn is made unless it is made very loosely. Also, if the bandage is likely to become wet, care must be taken to allow for shrinkage ; otherwise the tension will be too great. In determining the amount of pressure to be used, the kind of tissue must be carefully considered. For hard infiltrated tissue, strong pressure is necessary, but the limbs of delicate children and of aged persons, being unresisting, can bear only very



No. 2.

moderate pressure. A swelling that is highly inflamed must be bandaged very loosely. After a bandage has been applied long enough to accustom the patient to it, the tension may be made greater without regard to any increase or decrease in the swelling. There are some instances, however, in which from increased swelling the dressing becomes unbearable. This is the case when a limb is suddenly moved from the horizontal position in which it has been kept for many weeks and allowed to hang. In applying bandages about the chest, there must be no interference with respiration ; care in this particular is especially necessary if the patient is still wholly or partially under the influence of an anæsthetic.

There are two forms of the roller bandage, the single and the double (No. 2). Of these the single roller is much more commonly used. It consists of the outer end, or initial extremity, the inner end, or terminal extremity, and the body. The borders are spoken of as upper and lower, the names referring to their position when the patient is erect. To distinguish the surfaces the one toward the center of the cylinder is called the inner surface. The double roller differs from the single in having two bodies and two terminal extremities, but no initial extremity.

Two forms of roller bandage.

To fix a roller, place the initial extremity upon the point at which it is to start, using the thumb and forefinger of the left hand. The external surface should be next to the skin. Holding the body of the roller in the right hand, make two turns in the direction taken by the hands of a clock. For the first turn use the right hand alone.

Fixing the roller.

Making one turn in such a way as entirely to conceal a preceding turn is called repeating.

Repeating.



No. 3.

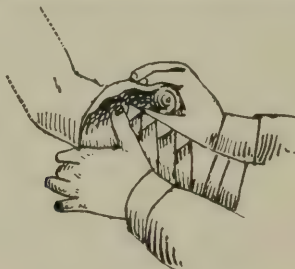
For a circular bandage and for fixing the initial extremity of a roller, this is necessary.

When one turn is made to conceal one half, two thirds, or three fourths of a preceding turn, it is said to overlap. An example of this is found in the spiral.

Overlapping.

To recur is to turn a bandage back upon itself, as in the figure on the preceding page. In recurrents of the stump and in the recurrent of the scalp, this is done.

To make a reverse is to turn the bandage so that the internal, instead of the external surface of the roller is next to the skin. When the right hand receives the body of the roller from the left it is supine, and in order to make a reverse it is only necessary to make the right hand prone (No. 4). At the same time put the thumb or forefinger on the last turn that it may not get out of place. Then after passing the roller around the limb and



No. 4.

receiving it with the left hand, draw the bandage as tight as required. This process is repeated with each reverse. In order to keep the reverses even, be careful always to place the thumb in the same perpendicular line and to overlap all the turns equally. By means of the reverse a bandage can be made to fit the limb perfectly.

In applying a bandage to a part of the body where the diameter is constantly decreasing, it becomes necessary to use the descending reverse. For this the right hand should be prone when receiving the roller and should then be turned until it is

Making a
descending
reverse.

supine. As in the ordinary reverse, the thumb of the left hand should be used to keep the preceding turn in place.

The terminal extremity of the bandage is secured either by pinning or by tying. If a pin is used it must be put through two or more thicknesses of the bandage in such a way that it is visible in at least two places. The point, of course, must not be left exposed. The pin may be parallel with the border of the roller or perpendicular to it. For the other method, two tails are made by slitting the end of the bandage. These are carried around the part in opposite directions, and then tied.

In removing the bandage as in its application, great care is necessary. If the ends or loops are not gathered carefully in the hand, they may seriously interfere with the work.

A circular bandage is one in which three turns are used repeating each other. A spiral bandage is one that extends obliquely over conical parts of the body, each turn overlapping the preceding one. An oblique bandage differs from the spiral in that there is a space between the borders of any two successive turns. A bandage in which two sets of turns alternate, touching each other where pressure is required, is called a spica bandage. To make a spiral bandage adapt itself, it is often necessary to reverse the turns. It then becomes a spiral reverse bandage.

A bandage about the head is fixed by making circular turns either about the upper part of the skull or around the face, passing under the chin.

Barton's bandage is an exception to the above rule. Starting back of the ear on the sound side, the bandage passes below the occiput to a point back of the ear on the other side and from there to the ver-

tex. Then it is carried around the face, passing down the sound side and, crossing the preceding turn at the vertex, it extends thence to the starting point. In this way the bandage is fixed. It now passes below the occiput, forward on the injured side to the chin, back to the occiput, and thence to the vertex. The process is completed by repeating each of these turns twice. At every intersection a pin should be used. This bandage is used in case of dislocation or of fracture of the lower jaw, or it may be used to keep dressings in place. Also if the leather headgear for Sayre's suspension apparatus cannot be obtained, Barton's bandage may be used to supply its place.

In applying a sling with six tails, the body of the sling is placed on the patient's head, the middle tails are tied under the chin, the posterior tails on the forehead, and the anterior tails at the back of the head.

In a sling with four tails, the body of the sling is placed as before on top of the head, the posterior tails are tied under the chin, and the anterior tails at the back of the head.

The handkerchief bandage is a cap for the head. Fold into a square, tying the two posterior tails under the chin, the other two at the back of the head.

When the wound is on the forehead, a triangular bandage is applied by placing the base of the triangle on the forehead, drawing the apex to the back of the head, and tying the remaining ends firmly over it. This is called the anterior triangular bandage. If the wound is at the back of the head the base is placed there and the bandage is tied in front. This is the posterior triangular bandage. If the wound is on the temple the base is placed there, and the ends are tied on the opposite

temple. This constitutes the lateral triangular bandage.

The occipito-facial bandage is first fixed by means of vertical turns about the face. After three turns, make a reverse at the temple. The bandage then passes back of the head around to the other temple. Here it may be secured or it may be carried across the forehead to the point where it was reversed. When movement of the jaw must be restricted, as after dislocation, this bandage is used.

When the figure-of-eight bandage is used for the left eye, it is fixed around the head, extending from right to left, and for the right eye it extends in the opposite direction. After passing the occiput for the third time, the bandage should extend below the ear, across the face, covering the eye, and thence over the

Occipito-facial bandage.

Figure-of-eight bandages for the head.



No. 5

prominence of the parietal bone to the occiput. After this turn has been twice repeated, turns are again made about the vault of the cranium (No. 5). Pins should be used at the intersections. The figure-of-eight bandage is used when pressure upon the orbit is required and it may also serve to

keep dressings in place. When both eyes are to be bandaged, one circular turn is made about the head after one eye has been covered according to the method described above. The other eye is then covered in the same way (No. 6).



No. 6.

For Hunter's V bandage a roller three yards long and two inches wide is required. It is fixed around the head. The roller is carried to the occiput three times, then a turn is made from the occiput forward to the chin and back on the other side. The turns about the head and those about the chin are then repeated alternately two or three times. This form of the roller serves to keep parts about the chin or lips in position or to retain dressings.

White's head and neck bandage requires a roller of the same size as the preceding bandage. It is fixed by means of turns about the head. When the occiput has been reached for the third time, the roller is carried around the front of the throat and back to the occiput again. The turns then repeat alternately those about the head and neck two or three times. In case of a

wound in the front of the neck, this bandage may be applied or it may retain dressings.

The capaline bandage requires a double roller six yards long and two inches wide. Lay the roller at the point of union, on the forehead, passing close above the ears, draw back to the occiput; cross and repeat. Upon reaching the occiput the second time make a rectangular turn by holding the right hand still at a moderate tension, and with a quick jerk drawing the bandage vertically to the forehead; now, holding the left hand still, repeat the movement before explained with the right back to the occiput, overlapping the edge of the bandage one third. Continue these alternate movements until the head is entirely covered, always overlapping the edge one third.



No. 7.

Desault's bandage consists of a pad (No. 7) and three rollers. The pad is the only part that the nurse needs to study. It is in the shape of a wedge, the base of which is two inches in thickness, the large surfaces measuring about five inches each way. A bag of strong muslin is generally used for the pad and is filled with bran or hair.

To fix the figure-of-eight bandage of the neck and axilla circular turns are made about the neck. The roller is then carried under the axilla, forward if the bandage includes the right axilla, backward for the left. From the axilla the roller passes to the neck. These turns are repeated alternately three times or, as in the figure (No. 8), they may overlap three quarters. The bandage should be four yards long and two inches wide. It is used in case of a wound at the side of the neck and for retaining a dressing in the axilla.

Figure-of-eight bandage for the neck and axilla.



No. 8.

For the spica bandages of the shoulder, have ready a roller seven yards long and two and one half inches wide. If the left side has been injured, fix the bandage by turns about the left arm just above the middle. Pass the roller across the back and under the right axilla, then across the chest to the left arm again. It must pass over the arm in such a way that the lower borders of the two turns cross exactly on the outer side of the arm. Similar turns are made, overlapping two thirds

Ascending spica bandage for the shoulder.

on the injured side and gradually converging until they reach the right axilla where they should repeat the preceding turns. This is continued until the bandage covers



No. 9.

the shoulder. For the right shoulder the bandage is applied in a similar way but the body turns cross the chest first, as in figure No. 9. The terminal extremity is secured at the spica by means of a pin. The ascending spica is used when dressings for the shoulder or the humerus are to be retained. It is also applied to keep the clavicle in place after dislocation of the extremity which articulates with the scapula.

When it is necessary to retain a dressing on the shoulder at the upper part, the descending spica is preferred. In this the initial extremity is fixed by turns around the arm at the upper part. For the right shoulder the roller is carried to the lower part of the neck, from there across the chest under the left axilla and across the back to the right shoulder. It should intersect the first turn so that the upper borders cross at the

Descending
spica band-
age for the
shoulder.

point where the top of the shoulder meets the base of the neck. It then extends under the axilla and turns are made, overlapping as in the ascending spica, until the shoulder is covered (No. 10). For the left shoulder, after fixing the bandage, carry the roller first across the back instead of across the chest.



No. 10.

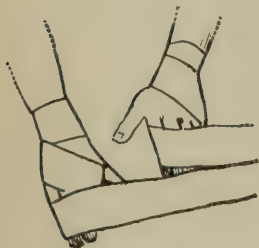
The spiral reversed bandage for the upper extremity is fixed at the wrist, the roller being carried from the left toward the right. For the right hand the roller is carried across the back of the hand, from ulnar side to radial (No. 11), to the ends of the fingers. Here a circular turn is made followed by a spiral reversed turn. After two figure-of-eight turns extending above and below the thumb (No. 12), the roller is again brought to the wrist. Spiral turns are made up the arm, giving place to spiral reverses where the diameter increases so rapidly as to require them. The bandage for the left arm differs in that the roller is passed across the back of the hand from the radial to the ulnar side (No. 11). This

Spiral reversed bandage for the upper extremity.

bandage is used for keeping dressings or splints in place.

For retaining a dressing at the elbow, the figure-of-eight bandage may be used. The roller should be two and one half inches wide and two yards long. It is fixed around the forearm near the elbow, then brought across the joint in front to the highest point that is to be bandaged. Descending, it again crosses the joint and passes around the forearm. This turn overlaps the first so as to lie one third nearer the elbow. Another turn is made above the elbow and one third nearer to it than the first. After this process has been continued until the bandage covers the elbow with the exception of the olecranon, that part is covered by means of a circular turn and the bandage is secured.

Figure-of-eight bandage of the elbow.



No. 11.



No. 12.

The ascending spica bandage is applied to the thumb to hold dressings or splints in place; the descending spica, however, is used after the base of the metacarpal bone has been dislocated. For either bandage a roller one inch wide and three yards long should be provided. In the ascending spica after being fixed at the wrist the roller extends to the end of the thumb, where a circular turn is made. The other turns are

Spica bandages for the thumb.

figure-of-eights about the thumb and wrist, each ascending one third. For the descending spica (No. 13), the initial extremity is fixed at the wrist but from there the roller is



No. 13.

carried to the metacarpo-phalangean articulation of the thumb. A circular turn here is followed by alternate turns about the thumb and the wrist, the turns overlapping two thirds and approaching the end of the thumb. In both bandages the spicas are made on the back of the thumb and the terminal extremity is pinned at the wrist.

The gauntlet bandage requires a roller one inch wide and five yards long. Turns are made about the wrist to fix the initial extremity. For the right hand, the Gauntlet. roller is carried across the back of the hand to the end of the forefinger. A circular turn is made here. The bandage ascends the finger by means of spiral turns and is brought back to the wrist, where another circular turn is made. After all the fingers and the thumb have been bandaged in a similar way, the terminal extremity is secured at the wrist. For the left hand the little finger is bandaged first. In some cases it is necessary to use a few reverses with the spiral turns. The gauntlet is used in case of fracture or luxation of the fingers or burns of the hand.

When a light dressing is to be retained on the back of the hand the demi-gauntlet is sufficient. This, too, is fixed at the wrist. In bandaging the right ^{Demi-gauntlet.} hand, the roller is carried from the wrist to the base of the forefinger, crossing the back of the hand, while for the left hand it extends across from the wrist to the little finger. The bandage passes around the finger and back across the hand to the wrist. After each finger is encircled, a loop is thrown over the thumb and the bandage is secured at the wrist by pinning. Each time that it returns to the wrist a circular turn should be made.



No. 14.

For the spiral bandage for the chest (No. 14) a roller three inches wide and seven yards long is necessary. The initial end is fixed about the waist. The spiral turns by which the bandage ascends the chest overlap one half. When the bandage has reached almost to the axillæ, a recurrent is made at the sternum.

Spiral bandage for the chest.

The roller is carried over the right shoulder to the spine. At the spine a recurrent is made back to the sternum over the left shoulder. When the ribs have been fractured, the spiral bandage is used to give support to the chest, and it may also be used to hold dressings in place.

There are two forms of the spica bandage for the breast, the single and the double. The single bandage requires a roller two and one half inches wide and seven yards long. It starts at the scapula on the side which is affected, and extends across the back to the highest point of the shoulder on the opposite side.

Spica bandage for the breast.



No. 15.

Crossing the chest it passes on the lower side of the affected breast, then under the axilla to the scapula. The initial end is fixed by repeating this turn. A circular turn is then made about the chest, passing just below the sound breast and over the lower part of the one which is affected. The shoulder and the chest turns are made alternately. The shoulder turns ascend by overlapping three quarters, the chest turns ascending by lapping three quarters below the sound breast and one half above the affected breast, as in

No. 15. For the double spica the roller must be ten yards long. The same method of fixing is used as in the single spica. From the left scapula, the roller crosses the back until it reaches the right scapula. Thence it extends below the right axilla and the right breast up to the opposite shoulder. It passes to the right scapula again and a circular turn is made, encircling the chest at the lower border of both breasts. The roller is then carried to the highest point of the right shoulder and, descending from that point, it includes the left breast. Crossing the back again and passing beneath the right axilla, it ascends so as to include the right breast and passes to the left shoulder. By continuing these turns and overlapping, both breasts are bandaged (No.16). The circular turns overlap one half and each of the others two thirds. Under each breast and over the sternum, spicas will be formed. The spica bandages are used for giving support or pressure or for retaining dressings.



No. 16.

In applying the figure-of-eight bandage to the knee a roller two yards long and two and one half inches wide

is used. It is fixed about the width of the bandage below the knee. The roller then crosses the popliteal space diagonally to a corresponding position above the knee and after making a circular turn, again crosses the popliteal space and a turn is made below the knee. These turns are continued, overlapping two thirds each time, those above the knee descending, while those below ascend. When the knee, except the part over the patella, has been covered, a circular turn is made over this part and the bandage is secured (No. 17). When dress-

Figure of
eight band-
age for the
knee.



No. 17.

ings or splints are to be retained at the knee, this bandage is applied.

For the spica bandage for the foot, the bandage must be two and one half inches wide and three yards long. It is fixed at the ankle. It then passes across the top of the foot to the base of the toes and makes a circular turn, followed by a spiral. Thence it crosses the foot to the heel. Here its lower border must be in a straight line with the sole of the foot. The roller is then carried around the foot and makes the first spica, crossing the preceding turn so that the two lower

Spica band-
age for the
foot.

borders intersect on the median line (No. 18). The foot and heel turns are then made alternately, each turn ascending by overlapping two thirds. Only the point of the heel is left



No. 18.

exposed. Dressings may be retained by this bandage or it may be used for pressure or support.

The incomplete bandage of the foot is fixed about the ankle, crosses the foot, and makes a circular turn about the base of the toes. After a spiral turn and a spiral reversed about the foot, the roller crosses the foot to the ankle. Here a circular turn is made repeating the fixing turns and then the bandage is carried around the foot again. It is completed by making one more turn around the ankle and one around the foot and is secured at the ankle. The foot turns and the last ankle turn ascend by overlapping two thirds. The heel is left uncovered. This bandage is used for retaining dressings. The required length is only two yards, the width two and one half inches.

Incomplete
bandage for
the foot.

The application of the complete bandage for the foot is the same as that of the incomplete until the spiral reversed turn has been made about the foot. The bandage then extends from the instep

Complete
bandage for
the foot.

around the heel to the instep again, as shown in No. 19. Thence the roller is carried to the sole of the foot. For the right foot, the bandage then passes around the heel just below the outer *malleolus* to the tendon of Achilles and



No. 19.

back to the instep (No. 20). It is then carried to the sole of the foot again, and around the side of the heel under the inner *malleolus* to the tendon of Achilles. It is secured at the instep unless turns are made up the leg. For the left foot the turns around the side of the heel are made in the opposite order. It is necessary to pin these two turns.



No. 20.

When uniform pressure is required about the ankle the complete bandage is applied, though its use may be simply to hold dressings in place.

If the spiral reversed bandage is to extend only to the knee, seven yards are required, double that number being needed to reach to the groin. The foot is covered in any one of the three ways given above. Spiral turns are made up the leg, replaced by spiral reverses where the diameter increases rapidly and by descending spiral reverses where it decreases rapidly. The bandage may be secured here but if it is to extend to the groin, the knee is covered by figure-of-eight turns. The bandage is completed by spiral turns, spiral reverses being used wherever the increasing diameter makes them necessary. The spiral reversed bandage is used for holding in place extension apparatus or splints or dressing or for support.

Spiral reversed bandage for the lower extremity.

CHAPTER XIV.

EMERGENCIES.

EXPERIENCE should be the nurse's teacher in regard to the action and effect of medicines. This is not
Poisons. so in regard to poisons. She should—within her line of duty—make a special study of the different kinds, their action and antidotes, as well as the treatment of them, so that she may be of use in any emergency that may occur.

Usually the patient himself or those about him will know what poison he has taken and then the nurse
The first thing to do. can proceed accordingly. But there are times when no one knows and it then devolves upon the nurse to do all in her power until the arrival of assistance. The first thing to be done is to send for the doctor, next in importance is to remember from first to last to keep perfectly cool and self-contained, to talk little but work deftly and quickly. Even if vomiting occurs emetics should be copiously administered. Any sort of water can be given, whatever is nearest at hand be it clean or dirty; put salt or mustard in it, if it can be obtained immediately, if not get it as soon as possible. The water should be lukewarm.

In case of collapse or extreme depression, stimulate but
Treatment of collapse. not with any alcoholic solution. Give beef tea or black coffee, if not possible by the mouth, by the rectum. Inhalations of aromatic spirits of ammonia may be tried in case of syncope. If the skin is cold and

clammy apply heat to the feet and sides. If the face is red or purple—indicating the presence of too much blood in the brain—apply ice to the head and give a mustard foot-bath. If the pulse has apparently ceased to beat, try artificial respiration. These methods of treatment are in general all the nurse dare administer. They will be more fully discussed in the study of each poison.

While the nurse is doing all she can for the patient, she should at the same time carefully observe his actions, general demeanor, the pupil of the eye, the condition of the skin, the pulse and respiration, the presence or absence of pain, of giddiness, of delirium, of drowsiness, or complete coma ; the odor of the breath and of the evacuations, the color of the vomited matter, and the presence of cramps and spasms. All these will help point to the poison taken and the nurse's report may help the doctor to arrive at a correct decision.

For emergencies the following table copied from Dr. Dulle's "What to do First in Emergencies" cannot be excelled :

<i>Poison.</i>		<i>Treatment.</i>
	Unknown.	{ Provoke repeated vomiting. Give bland liquids. Stimulate if necessary.
Acids.	{ Muriatic.	{ Give an alkali. Provoke vomiting. Give bland fluids. Secure rest. Stimulate if necessary.
	{ Nitric.	
	{ Sulphuric.	
	{ Oxalic.	
Alkalies.	{ Hartshorn (ammo-	{ Give an acid (vinegar). Provoke vomiting. Give bland liquids. Secure rest. Stimulate if necessary.
	{ nia).	
	{ Lye.	
	{ Potash.	
	{ Soda.	{ Provoke vomiting. Give dialyzed iron and salt several times. Dose of oil (?) * Secure rest. Stimulate if necessary.
Arsenic.		
Paris green.		
Scheele's green.		

* The interrogation mark (?) is placed after those medicines which the writer considers beyond the prerogative of the nurse to administer.

Sugar of lead.	{ Give Epsom salts. } Repeat. Provoke vomiting. Give bland liquids. Give dose of castor oil (?).
Corrosive sublimate (bichloride, calomel).	{ Provoke vomiting. } Repeat. Give strong tea without milk. Give raw eggs and milk. Give dose of castor oil. Stimulate if necessary.
Phosphorus. "Rough on Rats."	{ Provoke vomiting. } Give gr.—sulphate of copper or — doses of turpentine (?). Give doses of magnesia. No oil.
Lunar caustic. Nitrate of silver.	{ Give strong salt and water to provoke vomiting. Repeat many times.
Iodine. Iodoform.	{ Provoke vomiting. Give starch and water. Give bland fluids.
Chloral. Laudanum. Morphine. Opium. Paregoric.	{ Provoke vomiting repeatedly. Give strong black coffee. Keep up breathing, and keep patient awake if possible.
Croton oil.	{ Provoke vomiting. Give bland fluids and laudanum or paregoric (?).
Strychnine.	{ Provoke vomiting. Give a purgative. Secure absolute quiet.
Aconite. <i>Veratrum viride</i> .	{ Provoke vomiting. Stimulate well. Keep head low.
Atropia. Belladonna. Hemlock. Nightshade. Tobacco. Toadstools.	{ Provoke vomiting. Stimulate well.
Alcohol.	{ Provoke vomiting. Give hartshorn and water (?).
Decayed meat and vegetables.	{ Provoke vomiting. Give purgative. Give powdered charcoal.

"Bland liquids are milk, raw eggs, any sort of oil, gruel, etc." "Stimulants are tea, coffee, whiskey, wine, or hartshorn and water. Of the last, one drachm in a cupful of water will be enough for a dose."

"In making tea and coffee one must not wait to make it as if for the table, but pour hot water on the tea or coffee, squeeze well, stir together, and give the whole, tea leaves or coffee grounds, as well as the liquid. At the same time more may be made regularly if there are conveniences for doing so. Alkaline antidotes are hartshorn (a tablespoonful in two cups of water), soap and water, lime, whiskey, soda, chalk, tooth powder, plaster from walls, whitewash, and even wood ashes."

"Acid antidotes are lemon juice and vinegar. In giving an antidote do not wait for it to dissolve, but stir it up in any fluid except oil, and have it swallowed immediately."

Acetic, carbolic, citric, muriatic, nitric, oxalic, prussic, sulphuric, tartaric. These acids are generally strong corrosive poisons, and the patient will have a sour, acrid taste in the mouth, burning in the throat, which is increased by pressure, swallowing, or coughing; eructations of gas, severe pain in the stomach, vomiting. The lining membrane of the mouth will be wrinkled, there will be excoriation of the skin about the mouth or other parts which the acids may have touched; the countenance becomes glazed, the extremities cold and clammy, and the eyes prominent. Convulsions follow and, if not soon relieved, they are followed by death. The vomit will sometimes be bloody or frothy mucus, the breathing rapid and superficial. Prussic acid is one of the most deadly poisons and is sedative in its effect. The symptoms are giddiness, hurried pulse, heavy pain in the head, eructations having the odor of the acid, spasms, pupils contracted. When taken in large doses, death is almost immediate.

Acids.

By following certain tests the presence of unknown poisons may be detected, if other symptoms fail to denote them.

Tests for acids.

Acetic acid has an odor like vinegar; is very volatile has a pungent acid taste.

Carbolic acid has an odor plainly perceptible on the breath. It is a pink or white liquid, sometimes crystallized, and will loosen the skin and burn it a chalky white if pure.

Citric acid blackens when heated. It has an acid and agreeable taste, and is a heavy, rather oily liquid.

Muriatic acid has a suffocating odor, usually a light yellow color, but is colorless when pure, is very volatile, the fumes being visible like smoke.

Nitric acid makes yellow stains and gives rise to orange-

colored fumes if copper is thrown into it. It is liquid, colorless, and transparent ; its odor is suffocating, its taste acid and caustic.

Oxalic acid is found in long colorless crystals, much resembling sulphate of magnesia. It is extremely sharp in taste.

Prussic acid exhales the odor of peach kernels.

Sulphuric acid makes black stains and has no odor. Its taste is acid and corrosive.

Tartaric acid throws down a white precipitate when mixed with lime water.

The carbonates of soda, lime, and magnesia are all antidotes to the acids but the nurse should give them only under the direction of the physician.

Carbolic acid.—Apply heat to body, warm fomentations to stomach, cosmoline to cuticle burns ; give copious draughts of tepid water, and chafe the limbs. Glauber salts is the antidote.

Carbonic acid, fumes of charcoal.—Remove patient to fresh air ; apply friction to chest and extremities, and cold to head ; elevate the head ; produce artificial respiration.

Muriatic acid.—Give tepid water in copious draughts, plaster from walls, flaxseed tea or any other mucilaginous drink, common soap, more warm water.

Nitric acid.—Give same as for muriatic acid.

Oxalic acid.—Give mixtures made of plaster from walls, chalk, or whiting ; copious draughts of tepid water ; apply hot fomentations.

Prussic acid, hydrocyanic.—Ammonia is a good antidote but should not be used in a concentrated form ; apply cold douche to head, chest, and spine, and mustard to stomach ; produce artificial respiration.

Sulphuric acid.—Give same as for muriatic acid, except

that no water should be given, as water with sulphuric acid causes more burning; apply hot fomentations to the extremities.

Tartaric acid.—Give mixtures made of plaster from walls, chalk, or whiting; copious drinks of tepid water, hot fomentations.

Aqua ammonia, muriatic ammonia, or sal ammonia, liquor potassæ, caustic potash, potassium nitrate, Alkalies and their salts. or saltpeter, soda.

The symptoms are a caustic, acrid taste, great heat in the throat, with destruction of its lining membrane, acute pain in the stomach, vomiting of bloody matter, cold sweats, hiccoughs, weakness, violent colic pains, and bloody stools with membranous flakes.

Give vinegar, lemon juice, olive oil, mucilaginous drinks, warm water, strong tea and coffee; apply hot fomentations.

Test the vomit by the odor, and the restoring of the color to litmus paper that has been reddened by an acid. Tests.

Brandy, wines, whiskey, and all spirituous liquors. Intoxication is caused by alcoholics; if taken very Alcohol. freely, complete insensibility, accompanied by apoplexy, or paralysis of one side may occur; the countenance is swollen and of a darkened color; the breathing difficult, often stertorous, with a characteristic puffing out of the lips; the breath smells of liquor. Give freely emetics of warm water and salt. If the patient cannot swallow, they should be conveyed into the stomach by means of a catheter and funnel; place the patient in an erect position; apply ice to the head, warmth and friction to extremities. Loosen all tight clothing, apply hot and cold fomentations on chest, alternately; apply by wetting the fringe or the end of a towel, and slapping the chest vigorously, first using

hot and then cold water. Give a mustard foot-bath ; give strong coffee.

Creosote, Dippel's animal oil, oil of tar, oil of tobacco, oil of turpentine, fusel oil. The symptoms are Volatile oils. burning pains, vomiting, pungent taste, colic pains, purging, etc. The oils of turpentine and tobacco affect the nervous system. The characteristic odor of the oil will be noticed in the matter vomited. Give emetics, warm water and salt, white of eggs, camphor ; apply hot fomentations.

The symptoms are a burning in the throat, lacerating pain in the stomach, fruitless efforts to vomit, Iodine. suffusion of the eyes, excessive pain and tenderness of the epigastrium, thirst, salivation, and convulsions. Give starch, wheat flour stirred in water ; promote vomiting by copious drinks of warm water. Apply warm fomentations to the stomach and abdomen.

Arsenious acid, fly powder, Fowler's solution, arsenite of copper (Scheele's green), Paris green. The symptoms are pain in the stomach and abdomen, vomiting of greenish yellow matter, stools dark and offensive, suppression of urine, pain in bladder, sense of tightness in throat, salivation, pale countenance, clammy sweats, eyes red and sparkling, convulsions, followed by death. Give copious draughts of lime water and milk ; mucilaginous drinks (flaxseed tea, slippery elm) ; induce vomiting by tickling the fauces. If Fowler's solution has been taken, give lime water freely ; treat inflammatory symptoms as the case demands ; apply hot fomentations for pain, etc.

Sulphate of copper, or blue vitriol, carbonate of copper, or blue verditer, acetate of copper, or verdigris, Copper. arsenite of copper, or Scheele's green. The symptoms are very similar to those produced by arsenic.

There will be coppery eructations and taste, convulsions, palsy, insensibility, cold extremities. Give milk and white of egg. Vinegar should not be given. Treat otherwise as symptoms demand.

Sulphate of iron, copperas, green vitriol, chloride of iron. The symptoms are the same as those of other
Iron.
 irritant poisons: colic pains, constant vomit-
 ing and purging, violent pain in the throat, cold skin,
 feeble pulse. Give carbonate of soda, mucilaginous drinks.
 Particular symptoms are relieved by the general treat-
 ment.

Acetate of lead, or sugar of lead, carbonate of lead, or
 white lead, red oxide, or red lead, wines
Lead.
 sweetened with lead, water which has been
 kept in leaden vessels, food cooked or left standing in leaden
 vessels. The symptoms are irritation of the alimentary
 canal, spasms, paralysis either partial or complete. When
 taken for some time in small quantities, it produces violent
 and obstinate colic, rigidity of abdominal muscles, cramps,
 alternating with remission of pain, obstinate constipation,
 urine diminished, saliva increased, countenance gloomy.
 If relief is not obtained, giddiness, exhaustion, coma, and
 finally death follow. Use external applications to relieve
 pain. The doctor should be called in upon first symptoms
 of colic. Give milk and white of egg. Purgatives should
 be given.

Corrosive sublimate (bichloride of mercury), calomel,
 vermilion. The symptoms are like those of
Mercury.
 other irritant poisons, particularly arsenic, but
 quicker and more violent. Corrosion of mouth, tongue,
 and palate are often so great as to prevent speech. Give
 wheat flour and white of egg beaten up with milk and
 water. Tickle the fauces to induce vomiting. Give the

usual treatment to counteract nervous and inflammatory symptoms.

Nitrate of silver, lunar caustic. The symptoms are
 Silver. a burning pain in the stomach, vomiting,
 suppression of urine, etc., as in case of other
 irritant poisons. Give plenty of common salt, which is
 a sure antidote and will act as an emetic as well. Treat
 otherwise as the symptoms demand.

Chloride of tin, solution of tin used by dyers, oxide
 Tin. of tin, or putty powder. The symptoms are
 the same as those of other irritant poisons.
 There will be a metallic taste. Give milk copiously,
 white of an egg, flour and water ; tickle the fauces. Regu-
 late other treatment by symptoms.

Sulphate of zinc, white vitriol, acetate of zinc. Violent
 Zinc. vomiting, astringent taste, pain in stomach,
 pale countenance, cold extremities, dull eyes,
 fluttering pulse. Death seldom occurs on account of effects
 of vomiting. Do not give emetics, as vomiting occurs to
 excess in this form of poisoning. Give copious draughts of
 hot water which will relieve vomiting. Milk and white
 of egg are antidotes. Treat in other respects according to
 symptoms.

Phosphorus, "Rough on Rats." The symptoms are
 Phosphorus. the same as those of other irritant poisons.
 There will be a taste like that of onions in the
 mouth ; vomit emitting white fumes. Tickle the fauces ;
 give mucilaginous drinks ; other treatment according to
 the symptoms.

Glass or enamel. If taken in coarse powder it produces
 Glass. irritation and inflammation of the bowels.
 Give large quantities of crumbs of bread to en-
 velop the particles. then give mucilaginous drinks freely.

Aconite, arnica, atropia, belladonna, bloodroot, or *sanguinaria Canadensis*, Calabar bean, castor-oil plant, croton oil, digitalis, ergot, fish berries, or *cocculus Indicus*, *gaultheria*, jalap, lobelia, oil of tansy, *rhus venenata*, squills, strychnine, or *nux vomica*, *veratrum viride*. Vegetable irritants.

The symptoms are an acrid, pungent taste, dryness of mouth and throat, and sense of tightness, violent vomiting, efforts continued after stomach is emptied, purging, with great pain in stomach and abdomen, spasms, pupil of eye frequently dilated, breathing rapid and difficult; the pulse becomes slow and weak; collapse follows, especially in aconite poisoning, and death often results. If applied externally, some of these poisons produce violent inflammation of skin with the appearance of pustules.

If vomiting and retching occur to excess, ease with hot water and thin gruel, copiously given. If symptoms of insensibility come on without vomiting, give lukewarm salt and water and enema of soap and water; after this stimulate with strong coffee or beef tea. Apply heat to body, hot fomentations, mustard bath, friction, etc. Place patient in recumbent position and move as little as possible.

Tobacco, bitter almonds, fly poison, *hyoscyamus*, lettuce, opium, morphine, poppy, wild cherry. The Narcotics. symptoms are stupor, numbness, heaviness in head, desire to vomit; intoxicated, stupid manner, pupil of eye contracted, lively delirium at times, and often pain in body and limbs; the pulse at first is strong and full, afterward slow; breathing slow. If not speedily relieved, will end in death. Give emetics, salt and water, mustard and water, enema of soap and water or thin gruel; follow by black coffee given freely. Rouse patient by any and all

means possible, obliging him to walk, pinching and rubbing him, not allowing him to lie down.

The symptoms are nausea, heat, pain in stomach and bowels, vomiting and purging, fainting, pulse small and frequent, delirium, dilated pupils, stupor, cold sweats, and, unless relieved, death. Give an emetic, large doses of Glauber or Epsom salts, large enemata; afterward stimulate with coffee and beef tea in small quantities, and apply heat to body, also friction.

Shortly after eating there will be a heavy weight in the stomach, with vertigo and headache, a sense of heat about the eyes and head, great thirst, eruption on skin; death often results. Give an emetic, mustard or salt and warm water, or tickle fauces; give an enema of soap and water. Give vinegar and water to drink after above remedies; also bathe body with vinegar; treat other symptoms—collapse or overheating of blood—in the usual manner.

There will be a sharp pain in the wounded part which soon extends over limbs and body, swelling at first hard and pale, afterward red and gangrenous looking; fainting, vomiting, convulsions, jaundice; pulse rapid and irregular, breathing difficult; cold sweats; failure of sight; delirium, inflammation, suppuration, and death. Tie a ligature moderately tight above the wound, which should be allowed to bleed after being washed with warm water. Cauterize if possible, covering afterward with lint dipped in olive oil and hartshorn, etc.; if there is much swelling the ligature can then be removed. Keep the patient quiet and warm. Above all, give all the whiskey the patient will drink. Enormous quantities can be taken to counteract the poison.

Cantharides, or Spanish fly, potato bug. The symptoms are nauseous odor of breath, acrid taste, burning heat in throat, stomach, and abdomen, vomit and stools bloody; acute pain in the stomach, heat in bladder, with strangury, or retention of urine; convulsions and delirium. Vomiting should be caused by freely drinking sweet oil, sugar and water, milk, or linseed tea; give enemata, hot fomentations for pain and inflammation; camphor dissolved in oil may be rubbed over body.

Poisoning
from can-
tharides.

Scorpion, hornet, wasp, bee, gnat, gadfly. Generally only slight pain and inflammation are caused by the stings of venomous insects, but sometimes the symptoms are more violent and often fever and sickness are produced by the intensity of the pain. The sting can generally be removed by making a strong pressure around it with the barrel of a small watch key. Moist mud should be applied at once, afterward rub on oil and hartshorn and lay a small compress wet with the same or with salt water, over the wound. Use stimulants.

Venomous
insects.

The causes of syncope (fainting) are fright, joy, grief, sight of blood, apprehension, physical pain, overfatigue, loss of sleep, fasting, stomach filled too suddenly with hot or cold food. Fainting rarely occurs without premonitions, such as nausea, an empty feeling near the epigastrium, flickering of objects before the eyes, etc. The skin becomes cool, the face and lips white or of a bluish cast, the temperature low, respiration shallow, scarcely perceptible, the pulse feeble and perhaps for a short time indistinguishable.

Syncope.

Fainting is usually attended with no serious results, but if there is extreme exhaustion instant death may occur. The treatment must be prompt. Place the patient in a prone position, loosen the garments about the throat, chest,

and waist ; apply fomentations both hot and cold (as in alcoholism) ; inhalations of aromatic spirits of ammonia should be given cautiously. When consciousness returns, the patient should be stimulated with beef tea, coffee, and gentle friction.

The symptoms of concussion of the brain are similar to those of syncope—giddiness, confusion, staggering gait. The confusion of intellect and memory persisting if the jar to the skull is severe, the patient will become suddenly unconscious. The patient rolls on the side with head flexed forward and legs curled up, vomits very easily, even upon the movement of any portion of the body. When roused from his stupor, he strikes out and then falls into unconsciousness again immediately. All other symptoms are like those of fainting, and if there is no evidence of injury to the head it is very difficult to distinguish them.

As there is danger of inflammation and congestion of the brain, the patient should be kept as quiet as possible, and as heat is the most prominent symptom of concussion, cold should be applied to the head constantly ; also the head should be elevated.

If a blow on the head is severe, the bone is sometimes driven into the brain. The symptoms differ greatly from those of concussion. There will be unconsciousness, the pulse becomes full and strong, respiration snoring from paralysis of the palate and puffy from paralysis of the cheeks, also full and slow ; the pupils of the eyes are unequal, the skin is usually warm, unconsciousness is persistent, the patient cannot be roused ; there is general paralysis of the muscles.

The patient should be moved *very* carefully. Cold should be applied to the head ; if the hands and feet are cold apply

heat; apply mustard plaster to base of the brain (over the back of the neck). For compression artificial respiration should not be used.

The symptoms of apoplexy are the same as those of compression: sudden unconsciousness without
 Apoplexy.
 apparent injury; pupils of the eyes unequal.

The attack usually occurs late at night or early in the morning, and is preceded by a series of inarticulate cries. When only one side is paralyzed it is usually the left side.

Apply cold to the head; elevate the head; give purgative enemata (oil, soap and water); apply mustard to the back of the neck and place the feet in hot mustard water.

The symptoms of paralysis are dizziness, severe headache, clogged speech, partial or complete anæsthesia; the skin is hot above the heart, cold
 Paralysis.
 below; the pulse fluttering, irregular, and intermittent; delirium mild at first, becoming more violent.

The patient should be put to bed in a recumbent position; ice applied to the head; a mustard foot-bath should be given; mustard applied to the back of the neck, etc.

In epilepsy there is total insensibility, sudden and abrupt. The patient falls as if struck. Often a sudden
 Epilepsy.
 scream is given at the time of seizure. Other symptoms are a transient paleness of the face, a brief period of spasms, rigidity of the muscles, succeeded by violent paroxysms of the whole body, rolling of the eyes, foaming at the mouth. Usually the tongue is bitten. Respiration is labored, the pulse rapid.

Prevent the patient from injuring his head by holding him tightly but not enough to impede his movements. Insert a piece of rag, cork, or wood, with a string attached, in his mouth between the teeth to prevent the tongue from being bitten. Lightly hold his hands or wrap a blanket

about him loosely. A stupor is present after the paroxysm and then the patient falls into a sleep which usually lasts some hours.

The causes of convulsions in children are teething, bowel complaint, and an overloaded stomach. The Convulsions in children. premonitory symptoms are peevishness, restlessness, sleepiness, and stupor; the little patient will have a peculiar expression perhaps six or eight hours before the convulsion is present. During the convulsion the eyes become fixed, the thumbs turn in against the palm of the hands, the toes are flexed, and tremors shoot through the body occasionally.

Give a warm mustard bath with temperature about 100° Fahrenheit; apply cold to the head. The doctor usually orders an emetic (syrup of ipecac ʒi). A weak mustard plaster should be applied in turn to the back of the neck, to the thighs, the heart, abdomen, chest, soles of the feet, etc.

In suffocation there is total or partial unconsciousness; the face is purple and bloated. The patient Suffocation. must have fresh air. Produce artificial respiration, use the battery, massage, etc.

The symptoms of starvation are debility, a staggering gait, and delirium; the symptoms differ, however, according to the length of the fast. The Starvation. nurse can only keep the patient very quiet until the physician's arrival. If there is danger of total collapse, give warmth to the body in any manner that will not necessitate moving. A little stimulant given with a medicine dropper, a few drops at intervals, might be beneficial, but this should be nothing stronger than toast, barley, rice, or egg water.

Drowning. Free the body from clothing that binds chest, neck, or waist; turn on the face for a second, thrusting a finger into the mouth and sweeping it around,

to remove any foreign substance. Then lay the body flat on the back, placing under the shoulders something a few inches high, which will cause the neck to stretch and the chin to be lifted from the chest. The tongue should then be drawn out, and held by an assistant or by placing a stick or pencil across the mouth on top of the tongue and back of the last teeth, thus keeping it from falling back into the throat against the trachea. Let ammonia be held to the nostrils. Then begin artificial respiration; kneel behind the head, seize the arms firmly at the elbows, and bring them around horizontally from the body and over the head, until they meet above, where a good strong pull must be made, keeping them in that position for a few seconds. This movement draws the ribs up and fills the lungs with air, causing an inspiration. Then gradually return the arms to the former position beside the chest, making strong pressure against the ribs. This movement presses the air from the chest and causes an expiration. Repeat about sixteen times in a minute, continuing an hour or more if necessary. When signs of life appear, the patient should be kept warm and dry and a slight stimulant administered, such as coffee, tea, or wine.

To restore life.

To produce artificial respiration.

CHAPTER XV

PREGNANCY.

When the nurse is allowed to choose the situation of the room in which her patient is to be confined, she should carefully follow the rules stated in the "Care of the Sick-room." Thorough antiseptic arrangements are absolutely necessary in this branch of the profession. The nurse is however generally compelled to adapt herself to circumstances often adverse to antiseptic rules, but in all cases she should make the best of everything.

The duration of pregnancy is nine months. The way to decide upon the date of confinement is first to ascertain upon what day the last menstrual flow began, then count three months back, and add seven days; for instance: The last appearance of the *menses* was April 10; count three months back to January 10, and add seven days, bringing it to January 17, the probable day of confinement. It may be approximated, by adding four and one half months to the date of the quickening, in the case of a woman pregnant for the first time; and by adding five months in the case of one who has borne children before.

One of the signs of pregnancy is cessation of *menses*; these sometimes do not entirely cease throughout the whole period of pregnancy. They are, however, of a shorter period and of less decided color. There will

also be changes in the breasts. 1. They will increase in size, beginning in the early months of pregnancy. 2. A secretion termed *colostrum*, consisting of a thin, yellowish, watery fluid exudes from the nipples. 3. The "areola," the colored area around the nipple, which is pink (in brunettes it is brown) in its normal condition, turns a dark brown during pregnancy.

Changes in
breasts.

The use of the nipple bath is important. Take a wide-mouthed bottle one third full of water, add a little alcohol, and invert it over the nipple from three to five minutes daily. Also try to elongate the nipple by gently pulling on it every day for ten minutes.

Nipple bath.

No corset should be worn during pregnancy, and the dresses should be loose, hanging from the shoulders. Be sure that there is no compression over the breasts.

Dress in
pregnancy.

A change also takes place in the color of the vulva and vagina to a purplish hue. This is caused by the stoppage of the circulation, and the engorgement of the bloodvessels, arising from pressure caused by the enlargement of the uterus.

The changes in the abdomen are: 1. Enlargement, beginning about the end of the third month. 2. Marks upon the abdomen, extending at times down the thigh; these marks are called "striæ"

Changes in
the abdo-
men.

from their resemblance to scars left by whiplashes. If there is much pain from abdominal distention, cotton seed or cocoanut oil used as an inunction will cause relief. An abdominal supporter or bandage is a great relief when the abdomen is much distended. Pain in the back may be relieved by rubbing with the solution used for the back in any illness. 3. The "brown line" of pregnancy extending from the umbilicus down the median line of the abdomen.

4. A peculiar browning of the skin in patches, termed the "mask in pregnancy"; this condition as well as the "brown line" may also occur when there is no pregnancy.

Morning sickness generally begins about the time of the stopping of the *menses*, which is early in the second month; this symptom varies much in different cases. If it continues during the whole period of pregnancy it may become dangerous from the continued loss of food. In some cases it consists merely of a feeling of nausea for the first three months. A cup of weak coffee, tea, or hot milk given before the patient raises her head from the pillow may act as a preventive. If the vomiting is persistent the doctor should be notified, as constant loss of food might debilitate to the extent of endangering the patient's life. Sometimes enemata by rectum must be resorted to. Physicians usually order the bromides as a remedy for this, as it is largely a nervous symptom.

Quickening, or the movements of the fetus felt by the mother, is first experienced about the middle of pregnancy; in a case of first pregnancy, the quickening takes place about two weeks later than in that of a patient who has been pregnant before.

Constipation is always present during pregnancy, due to pressure upon the bowels by the enlarging uterus and also to lack of exercise. The treatment usually ordered is laxative in nature, viz., a glass of cold water before rising and one before retiring; a diet of fruits of all sorts. The following may be taken in a glass of water, night and morning, when necessary: Aromatic syrup of rhubarb, \mathfrak{z} ii, cream of tartar \mathfrak{z} iii. Massage over abdomen should be avoided, as there may be danger of bringing on a miscarriage. Careful use of the enema should be observed for the same reason; the latter

Morning sickness and its treatment.

Disorders arising during pregnancy and their treatment. — The bowels.

treatment however may be necessary in case of piles. It must then be given, not with a fountain syringe, but with Davidson's, using the pump very lightly.

Hemorrhoids, or piles, are quite common during pregnancy and require careful treatment. Obtain a daily movement of bowels, using a little oil or glycerine in the rectum to soften the fæces; require the patient to lie down fifteen or twenty minutes after daily evacuations. If the piles come down, warm fomentations should be used, adding a little borax; grease well with cosmoline and press the protrusion back into the rectum.

Irritation of the bladder caused by the pressure of the uterus on it, producing a constant desire to pass urine, often occurs during the first three months of pregnancy; a recumbent position gives relief. After the third month, the uterus rises in the abdomen and the pressure is removed. Retention of urine is liable to occur from the first to the ninth month; the walls of the bladder are likely to suffer from partial paralysis, because of its being flattened between the uterus and the abdominal wall. On account of the pressure in the last month there is so little room for the accumulation of urine that incontinence is the result. Retention also occurs during labor, which it may impede, and the English catheter, No. 8 or 9, should be used to relieve it. For irritation of the bladder, the physician usually orders an alkali, as the trouble generally arises from excessive acidity of the urine; mucilaginous drinks are also effective, as flaxseed tea, barley water, etc. Incontinence of urine is very apt to inflame and excoriate the walls of the vagina; warm water with Castile soap and a sprinkling of borax in it will relieve the irritation. It will

Hemorrhoids
and their
treatment.

Irritation of
the bladder.

Retention of
urine.

Incontinence
of urine.

also occasion distention of the bladder, when it becomes necessary to use the catheter, but the nurse should not attempt to use it upon pregnant patients, unless skilled in the operation; moreover she should not upon her own responsibility begin the use of the catheter, but should await the order of the physician, merely mentioning to him the condition of her patient.

Albuminuria sometimes occurs during the last two months of pregnancy. This is brought on by a constant pressure over the kidneys. The physician will doubtless desire to test the urine frequently and so require specimens. The nurse should be particular to obtain them clean, fresh, and unmixed with any vaginal discharge; the safest plan is to use the catheter for the specimens, letting the urine run directly from the bladder through the catheter into a bottle which has been made perfectly clean. The catheter should lie in 1-40 carbolic acid; and before it is used, as well as immediately after, boiling water should be run through it. The urine during pregnancy increases in quantity, and is of a lighter color than normal, and its reaction will be acid; if it should be of less quantity than normal, it may have an alkaline reaction, and the nurse should at once report that fact to the doctor.

The greatest care should be given by the nurse in case of discharges from the vagina. Absolute cleanliness will be the greatest help for it. The doctor will be likely to order douches, which should be administered with great caution; a fountain syringe, and no other, should be used for these douches; those usually ordered are borax and water— 3i to the quart, or about m xx of pure carbolic acid to one quart of water—the water used should be at about 105° . If the discharge is

excessive the doctor will perhaps order tannic acid to be used at night in the vagina and, after the douches, he may order an external dusting with calomel or one part powdered camphor to four parts starch. The parts to be dusted should be thoroughly dried before applying the powder. Leucorrhœa, commonly called "the whites," is often aggravated during pregnancy. The discharge is irritating and sometimes proves very obstinate, being generally worse at night.

There is often an increased flow of the saliva during pregnancy. Astringent washes, made of alum and myrrh, will relieve it somewhat; atropia in small doses is sometimes ordered. The effect of this should be carefully watched by the nurse. Teeth should neither be extracted nor filled during pregnancy, unless it becomes very necessary, as either will cause an increase of nervous symptoms.

Salivary
glands and
bad teeth.

Swelling of the veins in the legs (varicosity) and enlargement of the feet are common symptoms during pregnancy. When they occur the nurse should bandage the feet and legs, using the spiral reverse of the leg (see page 155); the bandage should be a bias strip of flannel three inches wide. (Flannel makes a more even compression than cotton.) If this treatment is neglected, the veins may enlarge to such an extent that they burst. The legs should be rubbed every night and morning for although there may be no indication of varicosity, the rubbing will often act as a preventive if properly done (see page 31). In case of varicosity they should be bathed in hot salt and water or alcohol and water, equal quantities, before the application of the bandage.

Varicose
veins and
their treat-
ment.

During pregnancy the skin should be kept in good condition, and the patient should bathe twice or three times

weekly; toward the end of the period the nurse should give her sponge baths in bed.

The diet should not be restricted, if the food is nourishing and well cooked; the breakfast and supper should be light. Fresh breads and all other indigestible food must be avoided.

The patient should avoid all violent exercise, especially lifting and sewing on the machine. A daily walk should be taken, not however after twilight or in damp places or up hill; walking on level ground is better than riding.

The most dangerous accident during pregnancy is uterine hemorrhage, which may occur at any period; however small the show of blood, it is always serious and points to miscarriage. It is necessary for the nurse to know exactly what to do at this time. She should compel her patient to lie down at once and keep perfectly quiet; send for the doctor; remove the pillow from under the patient's head and place it under her hips; raise the foot of the bed eight or ten inches; have as little covering over the patient and as much fresh air in the room as the weather will permit. She should also save for the doctor's inspection urine, stool, napkin, or soiled linen. If there are any signs of syncope, the limbs should be kept warm by rubbing and applying hot bags; give beef tea and black coffee (lukewarm). If there is much flow, give a douche of hot water at from 110° to 115°, and continue this treatment until the flow ceases or the doctor arrives.

A dragging down, oppression about the hips, cramp pains, or the slightest show of blood is indicative of a coming miscarriage. Any woman who has had one should observe the rules of rest all the more care-

fully, and avoid standing upon her feet during the time she would have menstruated if she were not pregnant. In case a miscarriage does occur, the patient should remain in bed until the flow has entirely ceased; chronic disease of the uterus will result from "getting up" too soon.

In case of the rupture of the membranes enclosing the fetus, before the time of delivery, send for the doctor; compel the patient to lie down and to observe absolute quiet. With the rupture of the membranes there is a discharge of a colorless liquid surrounding the fetus, which has a very faint musty odor, entirely different from the characteristic odor of urine; the nurse should save for the doctor's inspection the linen on which is the discharge. It is very important to act quickly, upon observing this "breaking of the water," as the loss of all of it will cause what is called a "dry labor"; it may also occasion changes in the position of the fetus, which may cause its death.

The most prominent premonitory symptoms of convulsions are partial or total loss of sight, seeing double or only one half of objects, great restlessness, and severe headache. Treatment: Plenty of fresh air; give a foot-bath in bed (see page 30); keep the head cool (see page 37); and loosen the patient's clothing. Watch your chance and slip something like a cork or a folded handkerchief between the patient's teeth, to prevent her biting her tongue or lips. She should not be held tightly, only sufficiently so to keep her from falling out of bed. If her own doctor does not come, send for another.

Breaking of
the water.

Dry labor.

Convulsions
and their
treatment.

CHAPTER XVI.

LABOR.

The first sign of approaching labor, is the sinking of the abdominal enlargement, gradually descending to midway between the end of the sternum and the navel. This indicates the "descent" of the fetus, the head reaching to the pelvic cavity through which it must pass in giving birth. Relief in breathing is felt at once by the patient from this "settling," as the pressure from the lungs is then removed. Pressure is now increased on the lower portions of the body. It is at this period (occurring at any time from the beginning of the ninth month) that swelling of the legs (varicosity) is apt to occur ; also, hemorrhoids and irritability of the bladder.

False pains occur during the last two weeks of pregnancy. The distinguishing points between the true pains and false pains are: False pains are generally located in the abdomen, are irregular in their occurrence, and are cramplike ; true pains are likely to start in the back, extending to the abdomen and thence down the thighs, and are nearer together than the false pains and grow stronger, although at times they occur at intervals of one half or three quarters of an hour. At first the true pains are a dull heavy ache. The show—a discharge of bloody mucus indicating the stretching of the womb—occurs at the time of true pains. If the nurse is

unable to decide by the symptoms shown, she should send for the doctor who will make an examination ; she should not make the examination herself, as in doing so she might break the membranes and so cause a premature "breaking of the waters."

There are three distinct stages of labor : 1. Stage of dilatation, stretching of the os, or mouth of the womb. In case of a first birth, this stage lasts from twelve to fifteen hours ; in case of births not the first, it may be very rapid, from two to four or six hours. The average is from six to ten hours. Pains of the first stage are cutting and grinding, hard to endure ; the patient is likely to be nervous and irritable. The doctor should be sent for during these pains, when they are "true." The quality of cry in this stage is that of pain and suffering. The bag of water is a membranous sac filled with liquid, in which the fetus floats and which protects it from injuries arising from falls or blows upon the abdomen of the mother. During the pains it is pushed forward, aiding in dilating the os and making labor more easy. At the end of the first stage of labor the sac bursts ; this is known as the breaking of the waters. Care should be taken not to rupture the sac until the os is fully dilated.

First stage
of labor.

2. The second stage begins after the mouth of the womb is stretched and ends with the birth of the child. In case of a first birth, it is from one to one and a half hours ; in case of births not the first, from twenty minutes to an hour. Pains of the second stage are forcing, bearing-down pains. If these are present upon the nurse's arrival the doctor should be at once sent for. The quality of cry in the second stage is that of groaning, caused by bearing-down and straining ; the patient becomes flushed and heated ; bearing-down is simultaneous with

Second stage
of labor.

pain. During this stage the head of the child is forced to the external opening of the vagina ; at the end of each pain the head recedes again, so that the birth canal is gradually stretched. In some cases where the birth is not the first, the head of the child is expelled with one pain ; this is caused by the tissues being flexible, from previous births. When the birth of the head is sudden, there is greater danger of laceration of the *perineum*.

3. The average time from the birth of the child to expulsion of the afterbirth is twenty to thirty minutes. The time of entire labor is, in case of first birth, from seventeen to twenty hours ; birth, not the first, from eight to twelve hours. The worst pain is over after the head is expelled ; after a very short interval of rest the shoulders are expelled by a strong pain, after which the remainder of the body is easily born. The pains now cease altogether for from twenty to thirty minutes when there exists a moderate amount of pain until the expulsion of the afterbirth, or placenta.

The foregoing is a description of a perfectly normal birth. There are many accidents and difficulties that may occur, which will be noted in another place.

Whenever it is possible, the antiseptic dressings should be used after confinement ; when they cannot be obtained, the ordinary napkins should be washed in 1-2000 bichloride of mercury, then dried and kept covered from the air ; a plentiful supply of these napkins should be prepared, as they need to be changed quite frequently for the first two or three days. The antiseptic dressing prepared by Dr. Garrigues of New York is the one generally used, and it is called the occlusion dressing. It consists of a piece of dry patent lint six by eight inches, rendered antiseptic by dipping into a

Preparations
for labor.—
Dressings.

solution of bichloride, 1-1000 ; a piece of gutta-percha tissue four by nine inches wet in 1-4000 bichloride of mercury ; a piece of cheese-cloth eighteen inches square, made antiseptic in the manner above stated. The cheese-cloth is folded to form a diagonal five inches in width, in the folds of which is placed a pad of oakum ; the lint is doubled making a dressing three by eight inches. Next to the lint the gutta-percha is placed, and next to it the cheese-cloth napkin is placed, the ends of which are pinned to the abdominal binder. These dressings should be changed every two or three hours ; the ones removed should be immediately burned. They should be worn as long as the discharge continues, which is not usually longer than two weeks.

In using a double bed, only one half of it need be dressed temporarily. For protecting a single bed, one and one half yards of rubber sheeting or thin oilcloth are required. In district work, the bed may be very well protected by newspapers. The rubber sheet should not be allowed to remain on the bed longer than necessary, as the rubber generates heat and causes the patient to perspire ; five days is usually the longest period it is needed.

Place over the mattress the rubber sheet or other protection supplied and pin firmly to the mattress ; over this spread a sheet and a draw-sheet ; the latter may be made by folding an ordinary sheet three or four times the width. This and the under sheet should be tucked in closely all around the bed or fastened firmly with safety pins ; this is called the "permanent bed." Over it should now be spread another rubber sheet or protective, and again a sheet and draw-sheet, firmly fastened. This constitutes the "temporary bed." Over this the top sheet and blanket are laid ; the spread

The maternity bed.

Preparation of bed for labor.

may be rolled down to the foot of the bed and drawn up after the patient is on the permanent bed, the nurse spreading a fresh sheet and blanket over her and removing those used during delivery. She should be particular to remove from the room all bric-a-brac and superfluous furniture. No slop utensils of any description should remain there after the labor. A second room leading from the one the patient occupies, should be used for all utensils required for mother and child, and the door between kept closed. The windows in the second room should always remain open. The slop water should be removed frequently during the day. A large piece of oilcloth should be spread under the bed reaching to the middle and extending beyond the side ; this should be removed after labor.

As in obstetrics all septic influences should be banished from beginning to end, everything used for the patient should be perfectly new ; particularly the bed-pan, syringes, catheter, etc., should never have been in use before. The following articles should be in readiness: Two rubber

Articles to
be in readi-
ness.

sheets or old comfortables to protect the bed ; a dozen sheets and pillow cases ; a bed-pan ; a catheter No. 8 or 9 (English) ; a urinal or old vessel (marked, and used only for that purpose) ; a Davidson's syringe, used only for rectal enemata ; a fountain syringe, used only for douches ; a little jar of cosmoline ; a basin for placenta placed under the bed, with a towel for covering ; a basin for vomiting, also under the bed ; a pitcher of water and a glass and feeder for patient's use during labor ; a binder ; two strong pieces of linen thread—to tie cord—kept in a solution of 1-4000 bichloride ; the napkins and dressings ; some soft cloths ; a slop bucket or jar with lid ; antiseptic solutions, two two-quart bottles or demijohns, in one of which is 1-20 carbolic acid solution and

in the other a solution of 1-1000 bichloride of mercury ; a pint bottle, in which is a solution (grains x to the ounce) of boric acid. A full change of both bed and body linen should be kept on hand constantly, and care should be taken to air and warm them carefully before using. The catheter should always lie in 1-40 solution of carbolic acid, and hot water should be run through it both before and after using.

When the nurse decides that the patient is ready for the doctor she should send for him, giving an accurate statement of her patient's condition, that he may at once know how to act in the case.

The nurse's
duty during
labor.

After the room and bed are prepared, she should lose no time in dressing her patient in the following garments : stockings and bed slippers, drawers, flannel undershirt, nightdress (which should be buttoned down the entire length), and a woolen wrapper.

Dressing the
patient.

During the first stage of labor, the patient will be irritable and nervous, and may be allowed to walk around the room and do much as she pleases ; but the instant the second stage begins she should be put to bed. The nurse should then roll the nightdress and undervest (the latter may be of gauze in summer, unless one of heavier weight is ordered by the doctor) well up under the armpits and fasten with safety pins over the front chest, also removing the drawers, slippers, and wrapper. The nurse may now take a sheet and lay it over the patient, pinning it at the right side beneath the sternum ; the extra length of sheet remaining may be laid in folds one against the other, and the bulk pinned at the top in front on the right side, thus making a sort of full skirt open on the right side.

Although the nurse should have stimulants on hand, she should not administer any unless ordered by the

doctor. She may give milk or beef tea if the patient needs or wishes it. In case of vomiting, she may give cracked ice or hot water. To relieve pain, she may rub the legs with warm salt water or massage them by grasping the muscles, and may press the palm of the hand hard upon the small of the back during pain.

All the tact the nurse possesses will be needed in most maternity cases; she should be kind, gentle, and sympathetic, but firm throughout. When it is the patient's first confinement, the nurse may make the time pass more comfortably and the pain seem less severe by encouraging her, letting her know that there need be no exposure if she will do as the doctor suggests. She should make light of the fact, while showing the necessity of the doctor's examination. The patient will be grateful to a nurse who will kindly explain the use and reason of her arrangements, which no doubt seem madness without method to the uninitiated.

When there is enough time, she should give the patient a full tepid bath, and rectal and vaginal injection, the former of soap and water at 100°, the latter of 1-6000 bichloride, water 105°; the external parts may be washed with a solution of the same a little stronger, 1-2000. The patient should also be urged to urinate and, if there is retention of urine, the doctor should at once be notified.

When her services are not otherwise required, the nurse should prepare the articles the doctor will need. On a table at hand and yet where it will not be in the way, the following articles should be placed: thread for the cord, immersed in the antiseptic solution; blunt-pointed scissors; the antiseptic solution (under the table); two basins, one for the doctor's hands

Stimulants
and nour-
ishment.

Importance
of tact on
the part of
the nurse.

Articles for
the doctor's
use.

and the other for the instruments, which, as soon as they are handed to the nurse, should be immersed in a solution of carbolic acid, 1-40 ; plenty of boiled water, hot and cold ; towels ; nailbrush ; cosmoline. On the bureau should be set the following : stimulants—brandy or whiskey, aromatic spirits of ammonia, a small bottle of ether, and one of chloroform well corked ; a hypodermic syringe, a thermometer, and the report book, so that if needed they may be on hand. It is impossible to foresee the emergencies that may occur in the progress of labor.

The nurse should be active and quick, using her head and eyes as well as her hands, that she may be able to see to the wants of both doctor and patient.

Antiseptics
constantly
on hand.

The most important points are to have fresh antiseptic water on hand for the doctor to use whenever he touches the genital organs and to be careful to put the instruments, when not in use, back into the carbolic solution, not allowing them to be laid on the bed or table.

The patient usually desires to have some one with her during her suffering, and the nurse may, if necessary, utilize this friend as an assistant.

Friends in
the sick-
room.

She herself should then attend to the doctor's wants, at the same time directing her assistant how to manage what is required of her. She should endeavor to keep all persons from the sick-room, with the exception of the one desired by the patient. They will usually be satisfied if it is kindly explained to them that the doctor is the one to decide that question.

There are two positions in which the patient can be delivered : on her back or on her left side. If the doctor prefers the side, the nurse must turn

Position of
patient.

her as he directs. (This position requires some one to hold the uppermost leg to separate the thighs ; if the nurse has

no assistant a pillow between the knees will answer the purpose.) The doctor will often direct the nurse to tie a sheet to the foot of the bed in order that the patient may pull upon it, aiding the pains in the second stage of labor. Immediately after the child is born, the nurse should gently and carefully help the patient into a comfortable position and see that she is covered properly.

Instantly after the head is born the nurse should place the length of her hand across the abdomen just below the umbilicus; the touch should not be too light but should press rather deeply into the flesh. The uterus, a little round, hard body, should be felt just below the umbilicus; if the nurse does not feel it, she should with the other hand rub the lower portion of the abdomen vigorously until by its contraction the small round body is felt. This hold upon the uterus prevents hemorrhage by contraction and the nurse should not let go until the bandage has been applied. If she is compelled to manage the labor, she must choose an assistant to do as she would, were the doctor present. If there is no one else, the patient herself may press the uterus.

As soon as the baby is born, the doctor receives it on both palms, laying it upon the blanket which the nurse should a short time previously have spread upon the bed for its reception, within reach of the cord, but far enough away from the mother to keep it free of the discharges.

A little flannel wrap, well warmed, may then be brought to cover the baby before the cord is tied. Now the nurse should take one of the little squares which she has previously laid in the solution of boric acid and wipe the baby's eyes, and with another piece wipe out the inside of the mouth, turning the baby on the right side;

the reason for this precaution is, that until the birth of the child there is communication between the two sides of the heart, which should, and usually does, close at birth. As the right side of the heart contains the venous, or impure, blood, it is best to lay the child on that side, so that if the partition is not yet complete the venous blood may not enter the left side of the heart. This danger is greater in premature births. The communication failing to close after birth and the venous blood mixing with the arterial cause what is called a "blue baby," which very rarely lives.

A "blue
baby."

The nurse should instruct the assistant how to place her hand over the uterus, below the umbilicus, to aid the birth of the placenta; the physician should always deliver the placenta. She should stand with the basin ready to receive it and, after the physician has examined it, cover it and put it under the bed. The cord is cut before the placenta is delivered. If the child breathes imperfectly, the doctor's attention should at once be called to it, and he will direct the nurse how to act. Another cover may be thrown over the infant if the room is cold. The hand of the assistant should still remain on the mother's abdomen until the binder is pinned on, as it favors the contraction of the uterus. The nurse should now give her attention to the patient, washing the parts and hips with 1-4000 bichloride, giving a douche if the doctor wishes it, and placing an antiseptic napkin or dressing over the parts; she should unpin the sheet and carefully pull it down to cover the soiled part of the bed under the patient's hips; then apply the binder, roll it half its length, passing the roll under the patient's back and hips, smooth it to make it free from wrinkles and tightly encircle the hips. Pin the middle of the bandage

The placenta.

Adjusting
the binder.

first, which will be over the uterus, the lower edge next, and the upper last ; this need not be so tight as the other two parts ; pin the napkin to it with safety pins. Remove the temporary bed thus : Unpin the rubber and linen sheets at the head and foot of the bed ; roll tightly and pass under the shoulders and back drawing them out at the foot. Be careful to see that the napkin is in place and the under draw-sheet and night-dress perfectly smooth.

The physician usually remains with the patient half an hour longer, during which time the nurse may be cleaning away the debris, which she should do as soon as possible, putting the room into its usual order.

After delivery the doctor examines the abdomen to learn whether there is another child. The nurse may have already discovered it while holding the uterus, but should not speak of it, unless she sees that the doctor has forgotten it. If there should be twins the other child may easily be felt through the walls of the abdomen. The doctor will manipulate the womb gently (the nurse still contracting the uterus by keeping her hand pressed above the umbilicus) and wait until nature brings the second as she did the first.

A plural (more than two) birth is rare and the children are not likely to survive any length of time, being often stillborn. Even in case of twins one is apt to be weak and sickly.

Although death from confinement alone rarely occurs in these days of advanced medical science, yet the responsibility resting upon the nurse is not lessened and, until she is familiar with the emergencies incidental to childbirth, she should not accept the charge of cases belonging to that branch of the profession. The

Removing
temporary
bed.

Twins.

Plural birth.

Emergencies
in labor.

slightest accident occurring in confinement is fraught with danger, and ignorance in regard to it may cause the death of both mother and child. On the other hand, the nurse who understands all she is required to know will act with ease and tact and will find no difficulty in obtaining the confidence and respect of the patient.

If the patient's physician is not on hand, she should send for another, thus removing the responsibility from herself.* There may exist circumstances

Circumstances under which a nurse may assume the responsibility of a maternity case.

where she will be compelled to manage without the aid of a physician, but only when it is inevitable should she accept this responsibility. There are several circumstances that come under the head of the "inevitable": as when the birth is very rapid; when the patient has previously borne children; or when she lives beyond the reach of a physician. Under any of these circumstances the nurse should follow as closely as possible in the footsteps of the doctor, avoiding, however, if she can, the giving of any internal treatment.

She should receive the child's head upon the palm of her hand. Her task now is to accomplish with *one hand* all that is to be done. She should reach for the little blanket, lay the child upon a portion of it and cover it, carefully avoiding tension on the cord. She should press closely upon the abdomen to favor the birth of the placenta and to prevent uterine hemorrhage, which is chief among the dangers attending a maternity case, especially in case of premature birth. Primary hemorrhage occurs within thirty-six to forty-eight hours after labor. Secondary hemorrhage occurs any time after the second day. The symptoms are pulse elevated, temper-

Uterine hemorrhage.

* A distinct line is drawn between the duties of nurse and midwife.

ature lowered, skin clammy, face pale and distressed, respiration superficial.

When these symptoms appear no time should be lost. Send instantly for the nearest doctor, Treatment of hemorrhage. remove pillows from under the head, elevate the foot of the bed and the patient's feet as well, remove binder, and place the hand over the abdomen and manipulate to cause the bloodvessels to contract and favor coagulation. If this fails to check the flow, apply hot or cold water ; if the patient is strong and healthy cold water will do no harm, but if she is debilitated and in case of a shock, the water should be hot. She may also give vaginal or uterine injections of water as hot as the back of one's hand can bear. These injections are not dangerous, as the Fallopian tubes are composed of involuntary muscles, and the water coming in contact with the walls of the tubes causes them to contract, cutting off communication between them and the uterus. The injections may be given every half hour if necessary. Dilute vinegar or lemon juice used as an injection will often control the hemorrhage.

Hemorrhage is sometimes caused by the placenta being attached *over* the mouth of the uterus ; this Placenta prævia. condition is called *placenta prævia*. As soon as the os begins to dilate the placenta is torn off, causing a severe hemorrhage. A speedy delivery is the only help for this. The patient's doctor and the nearest one should be sent for and, until the arrival of one, the nurse should act as for *post-partum* (after delivery) hemorrhage.

Puerperal fever is the result of blood poisoning by germs. Puerperal fever. Patients rarely recover from it ; and on account of its being very contagious the greatest care should be taken to have all articles used for obstetrical patients new and rendered antiseptic.

Puerperal insanity occurs with less frequency than other accidents, but is very difficult to take charge of when it does occur. No nurse should undertake the care of such a case alone ; both a day and a night nurse are necessary. It is unsafe to allow the mother to have her baby a moment alone and she herself should be closely watched that she may not do herself an injury.

Puerperal
insanity.

As the nursing of obstetric, maternity, and gynecological cases is often made a specialty by nurses, both in regard to study and practice, a list is here appended of all the articles necessary for the thorough antiseptic nursing of such cases, which she will carry with her in her "maternity bag." The bag, a leather satchel, should contain: a piece of chamois skin to lay inside the bag, a piece of iodoform gauze, a piece of bichloride gauze, a piece of antiseptic cotton, of absorbent cotton, antiseptic tablets of carbolic acid, antiseptic tablets of bichloride, and a bottle of distilled water to dissolve them in, one ounce of powdered iodoform in a saltshaker with a cork as well as a perforated top ; one bottle of carbolized oil, one little jar of rendered lard and one of vaseline, one bottle of colorless iodine, two camel's-hair brushes, one baby's hair brush, one medicine dropper, one half bottle of a solution of boracic acid (grains x to the ounce), one rubber catheter, a number of small squares of old linen for baby's mouth and eyes and mother's nipples, small dressing forceps, a pair of blunt-pointed scissors, one card of safety pins, one spool of strong linen thread, one clinical thermometer, one atmospheric thermometer, a Davidson's syringe and a one-quart fountain syringe in one box, one half dozen antiseptic towels, two small basins or bowls made of paper, a graduated medicine glass. The fabrics should be wrapped in oiled paper and marked. District nurses should also

Contents of
nurse's ma-
ternity bag.

carry with them in the bag one full suit of clothes for the baby, consisting of a binder, undershirt, napkins, a slip, a little shawl or wrap, and socks. These articles may be suggested to mothers who wish to prepare the "baby basket."

CHAPTER XVII.

PERIOD OF LYING-IN

IN the stage of the confinement following labor the most scientific nursing is required. The nurse should be thoroughly familiar with every detail of antiseptics, as without that knowledge she might make so serious a blunder as to cause the death of her patient. As soon as possible after delivery, she should make her patient comfortable, and while doing so endeavor to free her mind of any responsibility concerning her baby, telling her to try to sleep and that by the time she wakens the baby will be washed and dressed and perhaps hungry. The chances are that she will be tired enough to sleep an hour or more, and the nurse then should, while watching for hemorrhage from the uterus, make the room semi-dark and remove all soiled linen, sending it away and giving directions that it be soaked in cold water.

After the first day plenty of light and air should be admitted and the slightest odor in the room abolished. The temperature should be kept between 68° and 72°.

The doctor will probably allow no visitors during the first week after delivery. The nurse should inquire concerning his wishes on this point and then The doctor's orders. faithfully carry them out. If she observes proper tact she will *never* act as if the order proceeded from herself; the nurse who tries to make her own authority of any weight

will find her nursing a failure. The only proper way is to speak of all orders as coming from the physician, especially the disagreeable ones. His shoulders are broad enough to bear everything. She will find she has enough to do if she attends strictly to the duties entering into her sphere. In all cases a certain amount of tact is necessary in regard to the order concerning visitors. No

Seeing a
visitor. lying-in patient should see any friends or
visitors for the first ten days of her sickness.

This should be a rule strictly adhered to and not departed from except with the physician's approval. Quiet rest, undisturbed by the visits of friends and neighbors, who usually make long visits, is the best thing that can be given to a woman at this time. A nurse should report to the physician any infringement on this rule. Indiscriminate violation of the rule may seriously retard the recovery of the patient.

The nurse should surround herself with plenty of bichloride of mercury in solution, and also 1-20 Antiseptics. solution of carbolic acid. Into these solutions every instrument used for the patient should be immersed. The catheters and anything made of steel should be kept in 1-40 carbolic solution. The douches are generally ordered to contain a weak solution of bichloride; the broom with which the room is swept should be dipped in a 1-1000 solution of bichloride and the dust cloth kept damp with it.

The nurse who is scientific enough to appreciate the advantage of careful antiseptic nursing, will seldom have a case contract any of the dire diseases of the lying-in period.

The doctor usually orders douches from the first day either two or three times daily; the nurse Antiseptic treatment. should inquire particularly his wishes regarding them as to quantity, strength of antiseptic solution, tem-

perature of water, etc., and then follow his orders carefully. She should not trust her memory but put down every item—however small—in her note-book, carefully written, so that it may be referred to at any time in case of a mistake.

The doctor usually helps the nurse change the patient's linen throughout, the first time. She should inquire as to his wishes on this point and also when she may first bathe the patient. From the first she may rub her and bathe her partially with alcohol and water, just enough to keep her legs, back, and arms from aching.

After the first day whenever a fresh dressing or napkin is applied, the parts should be washed with the bichloride solution about 1-5000 in strength and a little more than lukewarm. When dressings are used they should afterward be burned; when napkins are used the nurse should herself, after they return from the wash, wring them from 1-2000 bichloride solution and dry them, being most careful that they are *thoroughly dry* before using them.

The catheter may be used for two days. The doctor will probably order the use of the bed-pan after the second day. Again, after every urination the patient should be washed with the bichloride. This is always necessary but especially so in case of any laceration where there are stitches. The solution of bichloride 1-5000 for washing must be measured very carefully, otherwise serious hindrance to the healing of the skin may be the result.

The diet for the first twenty-four to forty-eight hours is liquid, consisting of milk, broths, and gruel. The doctor will then order a soft diet until the first movement of the bowels after delivery. After the ap-

The dress-
ings.

Catheter and
bed-pan.

Diet.

pearance of the milk and after the danger of blood poisoning has passed, the diet will probably be full, with restrictions only in regard to food that increases or retards the flow of milk. Every doctor has his own ideas on this point and the nurse has only to obey orders, always writing them down in her note-book as she receives them.

The flow of milk starts between the second and third days. The doctor usually requests the nurse to obtain a specimen for analysis so that he may judge if it be rich or poor in quality; the patient's diet is regulated by the result of this analysis.

A covered china bowl containing a weak solution of boric acid and tiny squares of linen should be prepared for the breasts. The nurse should wash the nipples with the solution before and after the child nurses, using each time a new square of linen, which must afterward be thrown away so that it may never be redipped into the fresh solution. If during pregnancy the nipples and breasts are well cared for, there will be very little trouble after delivery; yet should there be trouble of any sort, the doctor should know it at once and he can then order something to remove the difficulty.

If the nipples are thin-skinned or undeveloped, the doctor will doubtless order a nipple shield. This the nurse may obtain at a drug store if it is not supplied by the physician, but the patient usually obtains articles of this sort from the physician. If after the use of the nipple shield the nipples

Nipple shield. grow to normal size and shape and are not sore, it may be dispensed with, and resorted to again if necessary. This shield should be removed at once after nursing, the nipple washed as usual, and the shield, after being carefully washed, should lie in a solution of 1-40 carbolic acid until used again.

The normal and perfect nipple is the cone-shaped; the most imperfect is the depressed. All shapes except the depressed are more or less likely to be gradually reshaped during pregnancy so that after delivery they may be of use; but the depressed nipple rarely responds to any treatment, and the idea of nursing the baby must be abandoned. In this and in other cases where it is necessary to dry up the milk, the following are among the remedies ordered by physicians: bandaging (which should never be done by the nurse unless at the request of the doctor); massage (see page 31); regulation of diet; inunction of camphor, laudanum, and lard, used with massage; application of hot fomentations to the breasts.

Drying up
the milk.

The gathered breast occurs so rarely among cases that are kept clean, that the nurse lays herself open to censure if it occurs in a case under her charge that promised well in the beginning. When it results from any other cause the source of the difficulty will be apparent, thus clearing her from blame. When it does occur she must report the very first symptoms that appear: any spots hardening about the breasts; tenderness or inflammation on or around the nipples. The physician will order poultices and fomentations, but the breasts will eventually be lanced, for which operation the nurse should prepare antiseptic solution, cotton, bandages, stimulants, etc.

Gathered
breasts.

Afterpains are caused by the contraction of the womb, occurring from the birth of the child until the end of the second day after. With the first child the pains are very slight, sometimes wanting altogether; but with all subsequent births they are more or less severe. They are classified as spasmodic and expulsive. The former are caused by the contraction of the muscular fibers of the womb. The expulsive pains are much more

Afterpains.

severe, sometimes becoming unbearable, and then it is necessary to send for the doctor. The doctor is sometimes obliged to give *intra*-uterine injections before the patient is relieved.

The whole period of lying-in is scarcely longer than six weeks. If the patient becomes uneasy at not being allowed to sit up, the nurse should explain to her that as long as there is the slightest bloody discharge (*lochia*) there is danger of uterine disease being contracted from it; but when the discharge has entirely ceased for twenty-four hours she may allow her patient more liberty. On the first

Sitting up. day after the stopping of the discharge she may

sit up in bed—against the bed rest for half an hour; on the second day an hour both morning and evening; the third day she may sit in an easy chair *with feet up* but must be only partially dressed; the fourth day, she may walk a few steps and, if no bad effects result, the next day she may walk more; the sixth day, if all goes well, she may have her full liberty. The foregoing refers to a case where everything is favorable. The patient is to remain in bed *at least* nine days before sitting up.

It may be well again to mention the most fatal complications occurring after labor.

Post-partum hemorrhage, or “flooding,” is so called because it follows the birth of the child and accompanies the separation of the placenta.

The presence of this dreadful emergency will be known at once; in a surprisingly short time the patient’s face will assume a frightful pallor, the pulse becomes weak and jerking, syncope follows, death resulting speedily if help is not at once given. The nurse should send for the nearest doctor besides two or three persons to assist her. She should apply ice wrapped in cloths to the thighs, external genital organs, and abdomen; grasp the uterus in both hands at the

umbilical region and keep up the pressure for a considerable period; elevate the foot of the bed and remove pillows; give stimulants. Sometimes this bleeding occurs *inwardly* instead of outwardly; the abdomen will then swell rapidly. For this the nurse can do the same as for outward bleeding, and send for any doctor and keep the patient quiet.

The next thing to beware of is milk fever, which differs in its symptoms from blood poisoning. In the former there is *always* headache; in the beginning of *septicæmia* there is usually *no* headache, but there is abdominal tenderness or enlargement. The nurse can often prevent this fever if she is careful to notice the state of the milk and report every slight abnormal symptom; as the failure of milk to appear at the proper time, or the inability of the child to nurse, constant flowing of the milk from the breasts, or too abundant supply.

Childbed fever, puerperal fever, *septicæmia*, and blood-poisoning are synonymous terms for the same disease, seldom occurring after the third day.

The symptoms are a chill, high temperature, pulse quick and feeble, suppression of *lochia* and milk, pain on pressure over the uterus. The mother loses interest in her child. This is a desperately dangerous condition and death usually follows in from six to nine days.

Another disorder attendant upon this period is puerperal mania, of which there are two forms. The first, the acute form, occurs soon after labor; the pulse at first is very rapid; great excitement follows, increasing to wild delirium and soon ending in paralysis and death. The second and more frequent form, appearing on the second or third day after labor, begins with melancholy. The patient has an aversion to all those she loves most, including the baby, which must not be allowed

Milk fever.

Childbed fever.

Puerperal insanity.

within her sight or reach. The child must be brought up henceforth upon the bottle and the mother most carefully watched. In this case the nurse should not accept the charge of the infant, but devote all her time to the mother.

If convulsions appear, send at once for the doctor. In
Convulsions. the meantime keep the patient from rolling off the bed and insert a pad between the teeth to prevent her from biting her tongue ; apply ice to the head and mustard to the feet and calves of the legs.

CHAPTER XVIII.

CARE OF THE CHILD.

SHORTLY after the delivery of the child the doctor will call for a thread with which to tie the cord, and which the nurse should have in readiness, immersed in a solution of 1-4000 bichloride. She should notice particularly his manner of tying it. The first ligature is made two or three inches from the abdomen of the child, the thread wound around twice; the second ligature is made one inch from the first and tied in the same way, using the surgical knot, which is a double knot made by passing the thread twice through the same noose. The cord should be cut with a jagged edge, to prevent hemorrhage. To avoid accident from the scissors upon any sudden movement of the child, the cord should be held so that the ends of the scissors point toward the palm of the hand of the one who is cutting.

Tying the umbilical cord.

The surgical knot.

When it is cut, the blood remaining in the fragment next the child is squeezed out. The nurse should then ask the doctor how he wishes the cord dressed. This will probably be either by applying scorched linen or cotton or by dusting with an antiseptic powder. Perhaps no dressings at all will be used. The best and most common way is to turn the fragment of cord back upon itself, and tie it with the ends of the thread ;

Methods of dressing the cord.

then a small piece of antiseptic gauze is slit in the middle and laid over the stump, the edges of the gauze turned over and the stump laid upon the left side. If the nurse is careful to change the dressing frequently she can keep the baby sweet and clean.

The substance that exudes from the cord for the first two days is likely to have a disagreeable odor. Bleeding of the cord. It resembles the white of egg and is called Wharton's jelly. Sometimes the cord will bleed; the nurse should then tie it more firmly and a little nearer the abdomen; if this does not stop the bleeding, she should send for the doctor, holding the cord firmly until he arrives, as there is danger of the child's bleeding to death. The cord will drop off about the fourth day, perhaps leaving small apertures through which germs can easily enter; Antiseptic precautions. consequently until the place is entirely well, antiseptic dressing is absolutely necessary.

The nurse will notice that a doctor never takes it for granted that a child is dead because it is apparently lifeless when born; neither should she—Methods of resuscitating a child. but she should faithfully employ one of the various modes of resuscitation, which are here given. The method best and easiest for the nurse to follow is described in detail on page 171. Another method is to breathe into the baby's mouth, at first slowly and cautiously, not exceeding six or eight times a minute; to accomplish this, the child's nose should be held, while the nurse breathes into its opened mouth, her own pressed close to it; she then removes her mouth, lets go her hold on the nose, and pressing the baby's sides expels the air she has breathed into its lungs. Another method is to slap the back and pour a little cold water suddenly upon the chest, repeating at intervals of three or four minutes for half an hour. Or the

child may be slapped lightly with the fringe of a towel dipped first into hot and then into cold water. "Scherltze's method of resuscitation" is practiced by the physician, but is not allowed the nurse, as it necessitates the previous tying of the cord. After resuscitation of the child by any of the above mentioned means, it should be kept warm, and if the bath is used it should be at blood heat, 100° Fahrenheit.

The nurse will observe before washing the baby that there is a greasy, tenacious, cheeselike substance covering the entire surface of the skin, being ^{Washing the baby.} thickest where it might excoriate while in the uterus; about the head, in the axillæ, groins, popliteal spaces, etc. This is called *vernix caseosa*. The child's body should be plentifully rubbed with rendered lard and after a short time partially wiped off with a soft cloth. Some physicians order the child dressed at this time, others prefer its being washed first; the nurse has but to follow the orders given her.

The baby's clothing should be loose and light in weight and plainly made. The infant whose clothes ^{The baby's wardrobe.} are simply hemstitched will look better and feel more comfortable than one which is overburdened with lace and embroidery. The undershirt should be made of soft flannel, the weight depending upon the time of year, and should be made with high neck and long sleeves. A binder about four inches wide, made of soft flannel, should be long enough to reach around the body once and overlap one third, the edges simply overstitched to prevent their raveling; pins should not be used to fasten it, but instead two pieces of tape sewed to one end and fastened around the body with the ends tucked in. There should be at least two dozen napkins, made of linen or cotton diaper not larger

than one half yard square. Absolute cleanliness in this regard is very necessary for the health of the infant. The napkins should be thoroughly washed, ironed, and aired before using and, when adjusted, pinned only with safety pins. The slip, also made of flannel light or heavy according to the season, should be about twenty-five inches in length, which will be just long enough to cover the feet and thus serve for both skirt and dress. These articles, excepting those mentioned for the head and feet, are all that are really necessary for the baby's wardrobe. If preferred, a little slip of thin muslin may be worn over the flannel one. Socks are very necessary at all seasons and should reach to the knee or even above. A small muslin cap is a good thing for the infant until the hair has grown a little. When awake the child should not be wrapped in a shawl or blanket, though it is well to throw a little extra covering over it when sleeping. The nurse should take especial pride in keeping her little charge neat and clean ; it is very disgusting to detect the odor of stale urine and perspiration on an infant.

It is not true that some babies "object to the bath from the first." If it is given properly and systematically from the first, the baby will soon not only begin to know the time for it, but will remain in a good humor throughout the time it is in the water and will worry if the usual hour passes without the bath. It is only the baby that does not know when to expect it, that grows to dislike and eventually refuse altogether to have its bath, kicking and crying so vociferously that the nurse is compelled to omit it through fear of giving the child a cold by bathing it while in a state of heat and perspiration. In fact the daily bath is quite useless unless everything pertaining to it is managed with systematic regularity. It

The daily
bath.

should be given very carefully and quickly ; the child should be held gently, the skin dried thoroughly, particularly the many folds of fat to be found on the healthy baby. The articles of clothing should be fastened firmly and securely, for babies as well as their elders experience a feeling of comfort and security when their clothes fit well.

The infant's grunts and movements of discomfort should never be ignored by the nurse, for if she neglects to change a wet or soiled napkin, the baby will soon fall into slovenly habits, which are far easier to acquire than to overcome. In this, as well as in many other respects the nurse should bear in mind the responsibility that rests upon her and her only during the first few months of the child's life. Habits may then be formed that cannot easily be conquered, and it often lies within her power to make the baby quiet and good-tempered or cross and troublesome.

Teaching the
baby good
habits.

Under no circumstances should the baby be fed between the regular times ordered by the physician.

Food.

The usual rule of bygone days was to feed it every two hours, a rule to which some physicians still adhere ; but there are now several new plans. The baby is fed three times daily and once in the night, the latter meal sometimes being omitted. The food preferred is, of course, the mother's milk—but if for any reason that cannot be given, the doctor will doubtless order one of the milk foods or sterilized cow's milk (see page 279). Whatever his order may be, the nurse must bear in mind that no matter what the mother may think and say and no matter what her own opinion may be—she should set it all at naught and loyally stand by the physician and obey his orders, doing all in her power to make his treatment prove successful.

Let the infant sleep as long and often as possible allow-

ing nothing to disturb it, either company, admiration, caresses, or food. It should *never* be rocked to sleep or hushed Sleep.

on the nurse's neck—where it is nearly suffocated by hiding its nose in the folds of the neck and where it must breathe into its tender lungs the air that is more or less contaminated by its contact with the pores of the nurse's skin, to say nothing of its breathing the air direct from the lungs of the one who is hushing it to sleep, as she kisses it again and again. The child should have a night and a day suit consisting of the same articles and of the same thickness, which the nurse should regulate according to the time of year. In the morning, the bath should be given before dressing; in the evening at about eight o'clock the night suit should be put on, every article of which should be clean, dry, and warm. A full bath should not be given at this time, but the face, ears, eyes, mouth, hands, feet, and organs of generation should be washed with tepid water into which is dropped a spoonful of alcohol or *eau de cologne*; it should then be laid in the crib, away from the mother's sight and reach, and when asleep—but not before—an extra light, but warm, covering thrown over it. If the light is removed and the infant left in the room alone it will soon become accustomed to going to sleep alone and in the dark, which as it grows older it will greatly prefer. Should it seem to require a nap every afternoon, that is the time it might be sung to and trotted to sleep and even held by the nurse or mother throughout the nap. When the baby is trotted while lying across the knees, the knee upon which its head rests should be kept quiet, as the jarring is injurious to both the spine and brain.

Chilling is the forerunner of all ailments in babyhood. Young children should be kept quite warm even in summer. Woolen or silk shirts and long stockings of the same

material should be worn during the summer as well as winter in the American climate, their thickness varying according to the season. Children that are bathed daily and then protected by clean, warm undergarments all the year round, may be taken out in all weathers—but the baby which is deprived of its daily airing is storing up just so much fuel for future illnesses. Children that ride in coaches should be better protected with wraps than those carried in the arms; the latter method though more old-fashioned, is the better and safer one for the child.

A general fallacy exists that whenever the baby cries, it is from hunger. There most assuredly is a cause for the child's crying, no matter how frequently that may occur, and it should be discovered at once. It will probably be found to have had too much food already and to be crying from colic pains. For these pains sips of water, as hot as the child can take it, are the best remedy known. It not only forces the gas from the intestines but acts upon their inflamed condition like balm and is also a sedative. Two or three teaspoonfuls may be given and, if necessary, this may be repeated in ten or fifteen minutes. The water, if tested by the nurse's own mouth, will not prove too hot for the child. When the baby has colic its hands should not be allowed to be raised above the waist line. Rubbing the abdomen gently in the direction of the colon will also ease the colic. Babies should have a drink of water occasionally, as they, as well as older people, experience thirst.

The nurse should weigh the baby twice weekly, beginning on the day after birth. The best time for doing this is directly after the bath before the child is dressed. The ordinary grocers' scales are the most convenient. They should be placed within the nurse's

Daily airing.

Colic pains.

Drinks of water.

Weighing the baby.

reach upon the floor and, when the bath is finished, the baby is wrapped in a warm napkin and laid on the scales.

The newborn child needs very little food for the first forty-eight hours. At any time from four to six hours after birth according to the condition of the mother, if she is rested or if she wants the baby to have its first meal or if the baby is suffering and seems to be hungry, it may be put to breast. The substance it obtains from the breast then is called *colostrum* and acts on the baby as a cathartic, causing the stools to be profuse, dark, and tenacious in character; this substance stains the napkins, and the nurse will save herself much trouble by laying pieces of soft linen or cotton rags inside the napkins for the first forty-eight hours. The cloths can then be burned.

She will save the baby a sore mouth if after each nursing she will wash its mouth thoroughly, using her little square pieces of linen and weak boracic acid solution. Any signs of abnormal condition should be reported at once to the physician; if its bowels are inclined to be constipated or too lax or if the baby is hungry and apparently not satisfied with what it gets at nursing or if there is a lack of appetite, etc.; any of these points should be carefully noted and reported.

The nurse should study the points of difference between the healthy and the unhealthy baby, a description of which—from birth to early childhood—follows. At the moment of birth a healthy child gives a lusty cry; the color of its skin varies from brilliant red to light pink, changing after the third day to a light yellow. This is caused by the gradual change in the circulation, and is called "baby jaundice," lasting from two to three weeks. The length of the child is about twenty inches. The weight

is between six and seven pounds ; in two or three days there will be a loss of three to eight ounces, after that a daily gain until about the tenth day, when it will weigh three or four ounces more than at birth ; at six months it will weigh just double what it did at three, and three times that weight at one year. The upper part of the body is better developed, but the legs will be plump and well rounded. The head varies much in shape, which is generally dependent upon the amount of pressure it has been subjected to during labor. It should not be pressed into shape ; nature will attend to that. Dangerous results will follow tampering with the fontanels, of which there are four, a three-cornered one at the back of the head, one behind each ear, and another—the anterior fontanel, in the middle and top of the forehead ; this is the longest in closing, not usually filling up until the sixteenth or eighteenth month. Tears appear between the second and third month. The face is smooth and placid, almost expressionless, until the beginning of the fourth month. The child will grasp anything within reach, have control of its head and sit alone at the end of the fourth month. The only cry of a healthy baby is a hungry cry, which is persistent and which nothing but food will appease. Babies begin to “take notice” at irregular periods ; some know the difference between mother and stranger at one month, others seem not to know the difference at four.

In diagnosing diseases in very young children the temperature, pulse, and respiration cannot be relied upon ; in health as well as in sickness any slight cause will make considerable change in any or all of them. The normal temperature is 99°, pulse 130 to 140 at birth, respiration 40 to 46. The baby will assume easy postures and sleep several consecutive hours, with eyes tightly closed. The urine is clear, frequent, and will not stain, its frequency

depending upon the time of year and exposure. The stools, from three to four daily, if the child is nursing from the breast will be orange in color ; in bottle-fed babies the color is lighter and the odor more offensive.

In speaking of a premature child the word viable is used to designate its capacity to live after birth ;
 The unhealthy baby. the time has been set at seven months of fetal life. A birth occurring before seven months is termed a miscarriage, or abortion. A premature baby born before seven months has been brought to the full time by the use of an incubator, or hatching box ; the one most frequently used is a French invention and called the *couveuse*, consisting of a wooden box of two compartments, one for the baby and one for bottles of hot water. The air is kept at an even temperature and the child kept in it until it comes to full time, being removed only for food, bath, and change of clothing.

It is very difficult to keep premature babies warm enough ;
 Premature baby. the skin also is particularly sensitive. The doctor usually orders rubbing with olive or cocoanut oil after each bath. It must be fed oftener than a fully developed child ; every hour is the usual time. It is a mistake to think that an eight months' child is more difficult to keep alive than a seven months' ; the more premature, the more difficult will it be to raise.

An indication of colic or flatulence may be seen in the constant play of muscles about the mouth, from a smile to distorted agonized look. A lung trouble is shown by sharp, thin nostrils that dilate and contract frequently. If there is pain in the head the forehead will be wrinkled in a vertical direction. The cry from earache resembles
 Different cries. the hungry cry, being persistent. Meningitis is sometimes indicated by sharp, shrill cries upon waking.

In any trouble of the brain, the arms are thrown wildly about, respiration is slow, and the head inclined to fall backward. A colic cry is also sharp and shrill coming on in paroxysms; the legs are drawn up toward the abdomen and there is a movement of the bowels, sometimes before, sometimes after, the paroxysm of pain.

Remedies for constipation in infants are very seldom given. Suppositories of soap, a very small amount of oil, or one half pint of warm water The bowels. used as clysters are the usual remedies; also gentle friction in the direction of the colon. The nurse should not, upon her own responsibility, administer the slightest remedy to her infant patients; they are very delicate charges and require scientific handling. If the physician orders a soap suppository, it should be made long and thin of Castile soap, about the thickness of a lead pencil and perfectly smooth; then dipping it into water to make it slip easily, direct it into the bowel about one half inch and holding the other end in the fingers gently manipulate it; in a few moments it usually has the desired effect. If an oil injection is ordered, a hard rubber syringe, holding a drachm, should be filled with the oil and the nozzle should be well oiled; a few drops should be injected into the rectum at short intervals until the desired effect is produced. An eye or ear syringe will answer for this purpose. If warm water be ordered, the same syringe may be used. The water will be more efficacious if retained awhile; a cloth held to the rectum will facilitate the retention.

If constipation is persistent, the nurse should remind the doctor that he has ordered laxative remedies so many consecutive days without effect. In such Persistent constipation. a case the rectum should be examined for malformation; the stools should be watched very carefully and

if they present the slightest abnormal condition the napkin should be saved for the doctor's inspection ; oily matter, mucus, curds, and peculiar color of the evacuations, are among the abnormal conditions.

The very first symptoms of diarrhœa should be reported,
 Diarrhœa. as in infants it is very difficult to check and prognosticates danger, especially in summer. If the stools are very loose, it is well to report the fact, so that the danger may be prevented by anticipating it. Observing and reporting when the breath is fetid may also prevent trouble.

In female infants the nurse should watch for any discharge from the vagina, and wash it carefully
 Urinary trouble. away ; if the napkins are stained or if the baby is peevish and fretful before or after passing urine she should report it. She may use a warm flannel to correct accidental retention of urine.

A low state of vitality is indicated if the temperature
 Low vitality. remains abnormal, if the eyelids only partially close when asleep, and if the anterior fontanel fails to close at the eighteenth month.

After the first washing of the infant, if there should
 Discharge from ears. be any discharge from the ears it should be at once reported, as it may point to brain trouble.

The utmost care should be taken with the eyes from the first moment of birth. Utensils used for them
 Treatment of sore eyes. should be used for nothing else ; the worst sort of poisoning has resulted from carelessness in this respect. The discharge is infectious whether dry or moist. In order to avoid increase of germs and therefore disease, the cloths that are used for the eyes should be burned, and the nurse should be particularly careful to wash her hands at once after handling an infant which has sore eyes. If

the eyes are irritable the infant should be prevented from rubbing them by fastening its hands loosely, giving them just enough freedom so that they cannot reach the eyes. The best way for the nurse to manage the eye treatment is to have a stand devoted especially to the articles used for them : two bowls, one empty and the other containing the antiseptic solution in which should be immersed a large number of small squares either of lint or soft muslin. These should as soon as used be thrown into the empty bowl and immediately after burned and the bowl washed with 1-20 carbolic acid. These applications should be used very frequently, the nurse being careful each time thoroughly to wash away all particles from the eye.

The skin is always very thin and tender and the slightest abrasion of it should have immediate attention.

The part should be washed frequently with warm water made soft with borax and, when thoroughly dry, powdered with a little lycopodium. Soap should never be used for washing babies. If at any time the skin breaks, the treatment of it should be given to the physician. When left in the nurse's charge, she should follow the directions for the care of bed-sores on page 26.

The skin
blisters.

Sometimes, soon after birth, before the skin becomes used to the atmosphere, there appears a rash, consisting of tiny elevations which are either red or white ; this is called red gum, or white gum. It lasts but a short time, is not dangerous, and seems to give no pain ; consequently it is rarely treated with anything but the usual daily bath and general care of the skin. The appearance of blisters or soreness about the nails should be at once reported. Any and all of these conditions indicate that the circulation is not perfect.

White gum
and red gum.

If sore mouth, or thrush, occurs in an infant in the charge

of a professional nurse, it is a disgrace to her, as it only occurs when the milk is allowed to become stale in the mouth. It is very necessary that after each nursing, be it day or night, the mouth be thoroughly cleansed. If upon taking charge of the infant the nurse discovers this trouble, she should at once report it to the doctor, who will prescribe one of the many antiseptic washes. In this disease the tongue, the inside of cheeks, and the palate present white spots the removal of which causes bleeding.

If the child is not strong and has not a growth of hair, it is well until it grows sufficiently, to have a covering for the head, a warm, close-fitting cap made of thin but warm flannel. The chief symptoms of snuffles are watery inflamed eyes and filling up of head and nose with mucus; the catarrhal condition is extremely troublesome, on account of inability to breathe through the nose, making it very difficult for the infant to nurse. The doctor will probably order that it be kept quite warm, also that frequent washings and syringing with some sort of antiseptic solution be given. The more vigilant the nurse is in regard to administering the treatment ordered, the sooner the child will recover. Besides the syringing a small pair of forceps with the bichloride gauze wound around the edges, may be used to remove pieces of the exudation from the nose.

There are a number of things that devolve upon the nurse to observe and report concerning the infant, all of which should be done with so much tact that if there be anything abnormal the mother will not suspect it. She should be able to glean no information from the nurse's face even if she be watching her during the examination. There might be a malformation that was not

noticed at the moment of birth and the nurse should then be the one to discover it. Among common malformations are tongue-tie, harelip, and clubfoot. In case of tongue-tie the child will be unable to push its tongue beyond the teeth, nor will it be able to suck. Malformations.

The nurse should let it suck upon her finger and she can soon tell if there is anything wrong. An illy-shaped head will in time right itself, unless the bone has had a slight injury done it.

Rickets may be caused by bad food, bad air, and general bad care. It is a disease of the bones, which are soft, owing to the fact that there is too little mineral substance in their composition; enlarged and disfigured joints result from this disease. The best and most rapid cure for this trouble is to remove the cause. The infant will be weak and debilitated and need very careful nursing. If the disease strikes the brain, hydrocephalus, or water on the brain, will be the result. Rickets.

When symptoms of a convulsion appear, as twitching of the muscles, inverted thumbs and toes, clasped hands, and distracted attention, the doctor should be summoned. While awaiting his arrival a warm mustard bath should be given and this should be repeated on a recurrence of the symptoms. Convulsions.

The vomiting of infants is not usually a serious symptom, yet the nurse should notice the matter vomited and, if it is anything more than milk from an overloaded stomach, should save it and show it to the doctor. Vomiting.

The breasts of infants sometimes swell. This trouble is not serious and lasts but a short time; while it continues the clothing should be very loose. Sore breasts.

If the breasts fester the doctor will probably lance them.

Any slight cause will raise the temperature. It is well

for the nurse to report any elevation, for fear that there may be inflammation present. The normal temperature of infants ranges from 99° to 100° ; the pulse from 130 to 140 ; respiration from 36 to 44.

Any fall, bruise, blow, strain, swallowing of hard substances, or any accident whatever to the infant, should be at once reported to the doctor that, by a thorough examination, he may detect any injury that might in the future do mischief.

Any irregularity of breathing or restlessness or an occasional clutching of the throat is an indication of lung lesion and should be reported. The nurse may be ordered to make a cotton jacket for the child. This may be made from an old underwaist, padded with cotton well up around the throat in the back and front, and the outside of the vest covered with oiled silk or oiled muslin. She should make two or three so that she may change them at intervals. Frequent inunctions of oil or whiskey are often ordered in the case of weak lungs.

There are various ways of treating croup and whooping cough ; here again the choice of the method rests with the physician. The early symptoms of *pertussis* (whooping cough) are fever and a cough that comes in paroxysms. In babies less than a year old the disease is very dangerous and the nurse should assume no responsibility in the treatment of it.

The nurse should use her influence with the mother in regard to vaccinating the infant. If it is not perfectly healthy and there is no particular reason for hurry, it should not be done until it is from six to eight months old ; severe irritation of the skin often occurs if the state of the patient is not considered. If the babe is perfectly healthy it may be vaccinated at the age of three months.

CHAPTER XIX.

GYNECOLOGY.

FOLLOWING obstetrics is the most convenient place to describe the female organs of generation with the diseases of those organs—in medicine termed diseases of women, or gynecology.

The bladder in the female is situated in front of the uterus and vagina and is connected to the umbilicus by a ligament. The capacity of the female bladder is greater than that of the male; the average amount secreted in twenty-four hours is estimated at about fifty-two and one half fluid ounces. The urethra in the female is shorter than the male urethra; the former being only about one and one half inches long while the latter is about nine inches long.

The term vulva includes the following parts of the female external organs of reproduction: the *mons veneris*, the rounded, fatty mass in front of the pubes, at the age of puberty covered with hair; *labia majora*, outer lips, enclosing the urinogenital opening; the *labia minora*, two small inner lips which help form the orifice of the vagina. Their vessels secrete an abundance of sebaceous matter. The *clitoris*, an erectile, muscular structure situated about an inch above the *meatus urinarius*, is small, rounded and is very sensitive. The nurse should guard against mistaking it for the entrance to the urethra, the *meatus* above mentioned.

Bladder.

External organs.—Vulva.

Between the *clitoris* and the entrance to the vagina is a smooth, flat surface. This is the vestibule of the vulva. The entrance to the urethra lies at the back of the vestibule and about an inch below the *clitoris*. This opening is surrounded by a rim of mucous membrane, making it feel like a small button with an elevated edge. It is an excellent guide for inserting the catheter. The urethra is a narrow, membranous canal about one and one half inches long, extending from the neck of the bladder obliquely downward and forward. It is through the urethra the catheter must pass to reach the bladder.

Directly below the opening to the urethra is the opening to the vagina, oval in shape, and more or less closed in maidenhood. The membranous fold extending partly across the opening of the vagina is called the *hymen*. There are other ligaments, muscles, etc., connected with these organs, but enough has been mentioned for the use of the nurse.

The rectum is more capacious and less curved in the female than in the male. It is situated behind the vagina, being separated from it by a triangular space, the *perineum*, which is often ruptured during childbirth.

The vagina is a membranous canal extending from the vulva to the uterus. It is situated in the pelvic cavity behind the bladder and in front of the rectum. Its walls are ordinarily in contact one with the other. Along its anterior wall it is about four inches long; along its posterior wall from five to six inches.

The uterus is the hollow, symmetrical organ which receives the germinating *ovum* in its cavity, contains and supports the developing fetus, and is the principal organ of expulsion at the time of parturition (childbirth). It is situated in the pelvic cavity

between the bladder and rectum ; it is held in place by the round and broad ligaments on each side and projects into the upper end of the vagina below. Its base is directed upward and forward, its apex downward and backward, forming an angle with the vagina. The uterus is about three inches in length and two inches wide at its upper part and about one inch in thickness. It weighs from one to one and one half ounces. It is pear-shaped and consists of the *fundus*, the *body*, and the *cervix*. The *fundus* is the broad upper extremity of the uterus ; it is convex in shape. It is placed on a line below the level of the brim of the pelvis. The body gradually narrows from the *fundus* to the *cervix*, the neck of the uterus. A small portion of the lower end is attached to the bladder ; the convolutions of the intestines prevent its attachment to the remainder of the bladder and the rectum. The uterus is covered with the peritoneum, a continuation of the lining membrane of the abdomen. The upper portion of the lateral margins gives attachment to the Fallopian tubes. The *cervix* is the lower, somewhat constricted portion of the uterus ; to its circumference is attached the upper end of the vagina. The *os uteri*, or mouth of the womb, is situated at its vaginal end ; the aperture is transverse in shape and is bounded by two lips, the anterior *os*, which is thick, and the posterior *os*, narrow and long.

The appendages of the uterus are the Fallopian tubes, the ovaries, and the round ligaments. These with the nutrient vessels and nerves are enclosed between the folds of the peritoneum composing its broad ligaments. They are placed as follows : the round ligament in front ; the Fallopian tubes on the free margins of the broad ligaments ; the ovaries and their ligaments, below and behind the broad ligaments.

Appendages
of uterus.

The terms, *menses* and menstruation, are applied to the periodical discharge of a sanguineous (blood-like) fluid from the female generative organs. *The menses.* This discharge varies greatly in different individuals from various causes. Climate and the existing state of health are perhaps the two most important causes of difference in the period of menstruation.

The discharge is not present in childhood or in old age. It usually appears at about the age of fourteen and ceases at the age of forty-five; yet it has been known to appear at the age of nine. In warm countries it is likely to appear at an early age, the reverse being the case in cold climates. It has also been known to continue up into the fifties. The usual normal period between the appearance of the *menses* is twenty-eight days, although sometimes only twenty-one and sometimes as many as thirty-one days elapse, the function still being performed normally. The discharge when normal lasts from three to eight days and the entire amount is from four to eight ounces. The source of the discharge is the body of the uterus and it is generally accompanied with more or less hemorrhage, but in some cases so small an amount that the term *white menses* is given that condition.

The *menses* are in some way dependent upon the ovaries for after their removal the discharge ceases. *Cause of menstruation.* Formerly the opinion was held that the ultimate cause of the discharge was the separation of the *ovum* (the egg) from the ovaries, but it is now known that menstruation may take place without the discharge of an *ovum* and on the other hand an *ovum* may be separated from the ovary without the occurrence of menstruation. The menstruation proper is mainly a removal of the so-called mucous membrane (*decidua menstrualis*). On account of this

degeneration the vessels of the inner surface of the uterus are opened and hemorrhage follows and is discharged with the mucous membrane to a greater or lesser degree.

For the regular occurrence and the normal act of this function, certain conditions are requisite; as, good circulation, a strong physique, and the healthful condition and the normal development of the generative organs.

The morbid conditions of the *menses* are divided into three classes:

1. *Amenorrhœa*, where the discharge is absent or deficient in quantity. *Amenorrhœa* includes *Amenorrhœa*. three forms of disorder: where the discharge is absent, scanty, or suppressed. Absence of the discharge before the age of puberty and after that of cessation is normal. When menstruation is absent, both uterus and ovaries are small—whether the condition is normal or caused by ill health. A deficiency of the usual normal amount indicates a more or less morbid condition. It may result from any of the following causes: a sedentary occupation, a strumous condition of the blood, a predisposition to phthisis, nervous prostration, debility, etc. Suppression of the *menses* during pregnancy and during lactation is normal. The latter condition lasts from seven to ten months. Suppression may also occur from the following conditions: change of living, change of climate, distress of any sort, overwork, mental strain, sudden shock, etc. If the *menses* should appear during lactation, the physician would probably advise the patient to wean the child, as the double strain might bring on exhaustion—although many can bear both and still remain healthy. In the case of the change of life, “cessation” (menopause), hot salt baths are usually ordered with laxative remedies, mustard poultices over pelvic region, etc.

2. *Dysmenorrhœa*, painful and difficult menstruation.

Dysmenor- Laxatives about a week before the time and
rhœa. hot fomentations, mustard foot-baths, warm drinks, etc., at the time, will perhaps bring relief. These should not be persisted in, if they do not at once bring about the desired result. A physician's advice should at once be obtained, for the longer this state continues the more difficult and prolonged will be the treatment.

3. *Menorrhagia*, excessive flow of blood at the menstrual period. This may be a normal condition sometimes, but it almost always points to an abnormal condition. This condition occurs often after the patient has borne children; the uterus is then softer and more easily congested. It also may be the result of extending the period of lactation over too long a time, which the woman does, not only to the injury of her health, but also to the risk of her life. This profuse discharge is also the accompaniment of inflammation of the uterus. It is common in patients suffering from different sorts of tumors, etc.

CHAPTER XX.

THE NURSE IN THE HOSPITAL.

THE building and management of a hospital—like all other important and much discussed subjects—have of late years undergone the extremes of needless simplicity and of an extravagant accumulation of useless *minutiae* that proved death

Extremes in the building and management of hospitals.

to any attempt to carry out the fundamental laws of antiseptics. Though these extremes have now ceased to be, it may be as well to take a glance at them. In the days of the earliest infancy of the profession of nursing—in the time of Florence Nightingale—the surgeons and the benefactors of hospitals, men such as Sir James Simpson and surgeons of the type of Mr. Erichsen held the opinion, using the words of the latter, that “when a hospital becomes pyæmia-struck it should be destroyed as an infected mattress is after the death of a patient who suffered from a malignant disease.” This false reasoning extended still further, even to the supposed danger of building large hospitals; of wards containing more than two or three patients; of the pernicious effect of having story above story. These fallacies arose from the ignorance in those days of the “germ theory” and of the possible annihilation of all germs by the practice of the principles of antiseptics. Overlooking the minute details of cleanliness (the most important rule in antiseptics) they imagined the fault to lie in the site, age, or

construction of the hospital. Only very recently has the happy medium been discovered and accepted, and the extravagant schemes been reduced to comparative reasonableness and therefore usefulness, for even with the discovery of the new theory of killing germs, came other erroneous notions, the chief ones consisting in the idea that every building should be separate and all wards should be on the ground floor. This was called the "Pavilion Plan"; hence hospitals were erected costing fabulous sums and then spread over such an area of ground that weariness was the chief point gained—weariness to the surgeons, physicians, and nurses. That as well as many other impracticable plans has now sunk into oblivion.

With the discovery and the acceptance of the antiseptic laws came the knowledge of the fact that the construction of the hospital may be as compact as desirable and the building as high as required—which indeed is very requisite for purposes of isolation, cooking, laundering, etc.—and still do successful battle against the wily germ. The whole battle may be gained by scrupulously observing the following laws: absolute cleanliness, the proper isolation and distance between beds, good ventilation and aëration, scrupulous and individual care of the patients, and the conscientious observance of the most minute rules of antiseptics however trivial they may seem.

When all this is accomplished in its entirety, this one important fact will then be accepted by the public,—that medical as well as surgical cases run serious risks by not availing themselves of hospital supervision and care. No disease finds foothold in the hospital which under similar circumstances would not flourish with tenfold increased severity outside the hospital or in private houses.

Supposing the hospital to be built and ready for use,

the most important subjects for explanation are as follows: the construction of the hospital, the site, management, etc., and the different methods of nursing various diseases.

Although it must be granted that in a book upon nursing, the subject of the construction and management of the hospital is one that may be deemed out of place by many, yet a twofold reason may be given for the description here of those subjects. First, then, the nurse who is so fortunate as to obtain her training in a hospital built according to the recent antiseptic discoveries will, by understanding the *modus operandi* of everything in it and the reasons for the peculiarities in the arrangement of the different apartments, the better appreciate her surroundings and will also avoid the blunder—born of ignorance—of abusing her many advantages. Second, if a nurse is situated less fortunately and obtains her training either in an old hospital or, as is very frequently the case, in a building built originally for other purposes and used for a hospital, a knowledge of what *should be* may enable her to make many an improvement regarding the arrangement and management of her hospital.

A properly constructed hospital will be situated also in the place most suitable for its needs in hygienic particulars. Although for emergencies a site in the city or town is more convenient, yet on account of the extra expense consequent upon the necessity of ground around it to deaden the noises and to afford room for the patients to exercise, the suburbs are usually decided upon as most appropriate for the site upon which to erect the hospital. Even with that precaution there are other points that should not go unnoted; as, for instance, the advantage of building upon an elevation or hill in order not to receive

The site.

the drainage of higher ground. The proximity of stagnant pools should be above all things avoided.

The structure of the hospital from which the following description is mainly drawn, is composed out-
 A particular hospital.—Its buildings. side of hard pressed brick with trimmings of brownstone. The windows are shielded from the light by means of shutters which have movable slats. Inside, the walls and ceilings are of non-absorbent plaster, tinted a blue pearl tint. The out-buildings are built mostly of hard wood and glass, and consist of but one story. These buildings are neither connected with the main building nor with each other. They consist of the maternity wards, burn wards, receiving ward, mortuary, or dead-house, and dispensary—sometimes called the “out patient department.” Throughout these buildings, including the main hospital, there is the utmost simplicity in the inside decorations. Many of the rooms are round and no cracks are visible. The floors are of hard wood and the cracks between the planks tightly stuffed with putty. The whole is then heavily waxed, this process being repeated about every three months.

Windows are plentiful and there are fireplaces in most of the wards and rooms. The same system of ven-
 Ventilation. tilation is used throughout all the buildings in the wards, corridors, and private rooms. The system is extremely simple and consists of the following apparatus: Whether containing a fireplace or not, every room and hall contains a steam radiator and three registers. One register is situated at the top of the wall just below the ceiling and serves to conduct the hot, pure air out of the room. By this the temperature of the room may be regulated. Another is directly below the first register just above the surbase; this conducts the impure air from the

room and should *always* remain open. The remaining register, also situated near the floor, brings into the room the pure air heated or cold.

This is the best known system of ventilation and, if properly understood and managed, keeps up a constant though imperceptible current of air through the wards, making void the old cry of a "hospital smell" or "a sick-room odor." Every nurse should familiarize herself with the philosophy of this perfect system of obtaining fresh air. No window should be opened even for a second during the critical period of a disease and the temperature need not vary a tenth of a degree from the point ordered by the physician. Only in winter, of course, is this system of use, for obviously in summer as much air must be had as possible. This simple method of obtaining fresh air may be explained as follows: The impure air, which consists largely of carbon dioxide, is heavy and consequently falls; hence the use of the register by which it is to be carried off. The register through which the hot or cold pure air enters should also be constantly open and the degree of warmth regulated in the cellar. This air being pure is light and rises; hence the use of the register at the top of the wall which can be open wide or not according to the temperature required.

As at this point it is necessary to speak of the cellar, that will be the first department described of the different hospital rooms.

The cellar of the hospital should contain nothing but the apparatus for ventilation, light, and heat. The cellar. The walls and ceilings should be covered with a non-absorbent calcimine; the floor should be of asphalt. There should be windows in the cellar, one corresponding to each window in the floors above, having sashes working

easily so that as much or as little air may be obtained as required. The entire cellar also should be thoroughly swept and dusted weekly and the windows and sashes washed as frequently as those above ground; for during the cold seasons all the fresh air used in the entire hospital is drawn up through the cellar. This is accomplished by means of the apparatus attached to each window, a part of the system of ventilation which need not be explained here. It is obvious then that dampness, dust, decayed leaves, or any bit of decomposed organic matter, if left to lie any length of time, would impregnate the air, causing it to be impure and making it dangerous to inhale.

The first floor of the hospital contains the main office for registering and discharging the patients, the office of the chief nurse, the reception room, etc.; also the surgical wards for both men and women. In cities where there are medical schools, etc., the clinic room is situated on this floor; also the pharmacy, in which there is a druggist always on hand. In small hospitals there is usually only a drug closet under the sole charge of the chief nurse.

The second floor contains the medical wards and accessory rooms. On both floors are rooms the counterpart of each other, such as the diet kitchen, convalescents' dining room, linen room, bathroom, etc. There are also a dumb-waiter and an elevator, moving from cellar to garret.

The third floor contains the following departments: the operating room with an alcove in which are stationary washstands for hot and cold water. Next to the operating room is the elevator that the patients need not be rolled far while on the operating table. Next are the large general laundry, kitchen, drying room, etc. In

some hospitals the clothes are dried upon the roofs, which are used for flats. The new system of having the operating, cooking, and washing rooms all upon the top floor is proving one of the greatest boons of the age for the cleanliness and comfort of our hospitals. Only in this manner can the disagreeable odors of ether and cooking be kept from permeating the wards and rooms. It seemed to take a long time for this idea to enter the minds of the public—that an elevator and dumb-waiter could as well run down as up. Before many years operating rooms and kitchens on the first floor will be a thing of the past.

The nurses' home should be situated inside the hospital grounds, but not inside the hospital and should be under the auspices of an entirely differ-

The nurses' home.

ent management. The cooking, washing, eating, and general housekeeping should *all* be apart from the main hospital management. The practice of having the nurses' bedrooms and sitting rooms off the wards under their charge should cease. In her hours of duty the keen vigilance of the nurse should not abate for one moment, but the hours set apart for her recreation she should spend outside the hospital. Until this end is truly and thoroughly accomplished the standard of nursing as a profession as well as the standard of nurses themselves cannot reach the maximum; for the nature of a gentlewoman revolts instinctively against the unceasing contact with the unbearable odors attendant upon disease and death, and the continual strain of fighting against death soon impairs the health.

The administration of the hospital is in the hands of a governing body called the board of directors.

Administration of the hospital.

The work of this board is to enforce the necessary economy consistent with the due supply of requirements for the sick, comprising the general super-

vision and discipline of the establishment as well as all the financial arrangements. The details in the management of the hospital come under the authority of the superintendent or chief nurse, who is responsible for the general good appearance and comfort of the patients and of every one employed in the hospital.

On the ward nurse, however, and on her alone, rests the actual success of the work. On her conscientious labor and gentle sympathy, if she but understood the magnitude of her position, depends the comfort of the patients and consequently the success of the hospital; hence the necessity of inserting this chapter, that she may realize the importance of understanding how to work, for unless she appreciates the fact that there is a right and a wrong way to do everything small or great, and unless she can see through to the result of the problems as they arise, she will fail to discover many useful lessons throughout her training and miss many enjoyments that are often experienced in hospital life.

We take it for granted then that the nurse understands from the introductory chapters of this book that every question of small or great moment should be referred to her superior; if a probationer, to the staff nurse with whom she works; if she herself is a head nurse, to her chief. She should never accept responsibility as her own as long as she is a subordinate. Speaking advisedly, however, the "happy medium" is not to be ignored regarding this point. A staff or chief nurse does not wish to be annoyed by the probationer concerning things that her own common sense should decide for her; for instance, whether she should open the window near a bed to air it when the rain would pour in upon it.

The object of the remaining pages of this chapter

is simply to aid the nurse in discrimination; to show her how to blend the humane with the scientific nursing, making her work none the less scientific thereby and more pleasurable. Every disease requires different nursing; every medicine requires different administration and watching, and it is the ability to recognize these fine points that makes the life in the hospital an interesting one and the nurse and her work a success.

The receiving ward is a pavilion consisting of but one room or ward in which there are about six beds. At one end are stationary washstands, from which hot and cold water may be obtained, and a fireplace or stove on which is always a covered boiler holding about three gallons of water and which the nurse in charge must not allow to boil dry. From the fixture for gas in the center of the room over an operating table hangs an irrigator, also covered to exclude the germs, and filled about one sixth of its capacity with a bichloride solution, ready at any moment to be filled with hot water for use. At the lower end of the room in the middle of the partition is a door leading to a good-sized bathroom in which are two or more bath tubs with the usual accessories, including the closet for the linen. At either side of the bathroom door are large cupboards with glass doors containing all the appurtenances for emergencies. The shelves below contain numerous draw-sheets, mackintoshes, gallon bottles filled with antiseptic solutions, etc. The ward furniture is completed by a few tables for instruments and a couple of chairs. The nurse in charge has her own chair and table, but she sits down only between the ambulance calls. As long as patients remain in this ward she devotes her time to them and to putting the room in order. When business is slack she supplies her used-up stock—ether cones, splints, etc.

All patients are taken to the receiving ward when brought from the ambulance or patrol and are then examined by the physician in charge, who, having decided to what department each belongs, passes him over to the nurse, who in turn—unless the doctor orders differently—gives him a bath; after this she sends him with an attendant to the main office to be registered and thence to the department assigned him by the physician. Emergency cases such as poisons, fractures, and wounds, are operated upon and dressed in the receiving ward before being taken into the main hospital.

In all of these cases it is the nurse's duty to decide at once—by her observation of the patient—what will be needed by the physician for each particular case, and prepare everything within call and reach. In the event of open wounds or compound fractures, she should cut away all surrounding garments; if dust and dirt are in the wound and if she can, without starting more hemorrhage, she should gently irrigate the part and then place over the entire wound a piece of gauze wet with a weak solution of bichloride. Human lives are often saved by the prompt attention given the wounded at the short period before the surgeon touches them. An explanation of the various methods of suppressing hemorrhage has already been given (pages 117–120).

The patients in the acute surgical wards require different nursing from that of any other illness. Operations or medical diseases of the internal organs or gynecological troubles are not referred to here, but *acute* surgery only. Men and women who have met with accidents, such as fractures, gunshot wounds, stabs, etc., would be physically well were it not for the accident, and after the first few days, during which the danger of

blood poisoning is imminent, they are allowed full diet; even from the first they are given a generous nutritious diet, for that, above every other treatment, helps to fight against the dreaded *septicæmia*. Toward these patients the nurse should show the utmost kindness and forbearance—remembering that, aside from the accident, they are in good health and usually lack the sanguine, passive demeanor that accompanies a disorder of any internal organ of the body. Although, for the reasons just adduced, surgical patients are rather more prone to be irritable than others, they are more easily amused, for with them, when all goes well and the danger of *septicæmia* is passed, the danger of overexertion and overexcitement does not exist. Even while she works, the nurse may help while away the dreary hours by conversation and also allow the patients to help her by rolling bandages, making splints, etc., and should there be any leisure time while on duty she may play harmless, non-exciting games with them.

Absolute cleanliness is the keynote to successful surgical nursing and there are but few set rules to offer the nurse for a criterion. She must have a thorough knowledge of her business—particularly that part of the profession termed antiseptics. This knowledge, however, will avail little if not accompanied by a faithful conscientiousness, which if not innate must be acquired and which allows no respite from the constant and vigilant battle against those dreaded marauders—germs. A grain of dust left to fly about and do mischief, a drop of blood or pus allowed to remain and dry, thus adding another million or so of germs to the atmosphere, a want of the proper care of instruments, sponges, dressings, etc.—these explain the secret of unsuccessful results. In the most carefully built hospital, modeled according to the strictest hygienic principles, an untidy or

indifferent nurse may make havoc of an operation. Against her heedlessness the surgeon's knowledge avails nothing, for to every order she may give the semblance of obedience while in reality the germs from the beginning may have had full sway.

For medical patients the nursing must be less general, more attention being paid to the individual cases. No loud talking or noise of any sort should be countenanced. The more quiet the ward and the more gentle and tender the treatment given to medical patients, the better results will the nurse procure. In these wards reading aloud, lively talking, singing, etc., are entirely out of place; for these patients the nurse's leisure time should be employed in catering to their capricious appetites, readjusting their pillows and changing their positions at frequent intervals. In truth the nurse's work here seems endless, for in medical diseases every organ is more or less sympathetically affected. The mouth is apt to have a disagreeable taste requiring the frequent use of a mouth-wash; the circulation is somewhat impaired and the hands and feet are likely at times to be cold, needing occasional friction or bathing with alcohol or salt and water. Thus every spare moment of her time on duty may be utilized and, weary though she will be when her release from the wards is at hand, yet the inward satisfaction from the thought that not a patient under her care is left uncomfortable, is ample reward to the conscientious nurse.

In both the obstetrical and maternity wards in a general hospital, the nurse has many opportunities of sowing seeds of morality. It is true that it may seem out of place to many, yet in the obstetrical department, while the patient is waiting for "her time," it may be that an occasional

The medical wards.
The obstetrical and maternity wards.

seed may take root and produce an hundredfold. In all cases of the foregoing types, the main work of the nurse in charge is to enforce the regulation discipline and to endeavor as much as lies in her power to urge the patients to keep themselves neat and to observe the hospital rules. In the maternity wards the proper use of antiseptics is again the chief work of the nurse regarding the treatment of both the mother and child. Observation is the next most important point in the nursing of obstetric and maternity cases. Many an emergency may be avoided and long weeks of severe illness to both mother and child by the ability of the nurse to detect the symptoms of the approach of an emergency as well as the presence of one.

For the patients in the wards for nervous diseases the nurse will need all the patience and tact she possesses besides all that she can acquire; for ^{The nervous wards.} no class of human beings require more patience, gentleness, and kindness in their treatment than the epileptics, the paralytics, the "innocents," and the deformed beings to be found in these overflowing wards in the general hospitals of large cities.

A few ideas regarding another branch of nervous diseases will be noted here. There exists a false idea extending beyond the nursing profession, that, when a physician pronounces a disease to be of nervous origin, it is to be concluded that the doctor meant that the patient's illness was assumed or at least greatly exaggerated. Moreover if with reference to a spasm the doctor should say, "This spasm certainly contains elements of hysteria," the usual conclusion that most people—the nurse included—glean from such a remark is, that the spasm referred to contains elements of insincerity, that if it is not altogether assumed, it is at least partially so. This is a great mistake.

The word hysteria is applied to a peculiar kind of rigid spasm and there is known to exist no convulsion or spasm more real than one originating from any disease attacking the nerves—no pain more acute or harder to bear. Instead of the suspicious glances or open contempt that these sorely afflicted patients sometimes receive from nurses and friends, the keenest sympathy should be shown all disorders coming under the head of hysteria. There are many phases of this disorder and they are of so much importance that many of the wisest medical men choose for their specialty that branch, embracing gynecology, psychology, and all forms of insanity from causes not hereditary. A lifetime of study by the most intelligent and most energetic workers is not enough to fathom the mysteries which those branches of medicine offer, and it behooves the nurse to be most sympathetic, gentle, and long-suffering with her patients afflicted with any of the diseases above mentioned. Even the physicians are often left in ignorance of the hours of suffering that have brought about the pitiful results seen in the patients sent to them for treatment and thence to the guardianship of the nurse.

This subject is concluded with a few remarks upon the nurse's treatment of insanity in its different phases because of the wide difference and separation between them. There exists a decided line of demarcation between the treatment of a sick man and that of an insane man and as marked a difference exists between the patient who is nervously insane and the one who is really insane. The former, through exaggerated sensitiveness and the fear of being considered insane, will penetrate the meaning of the nurse's thoughts and actions, while the latter will be reckless regarding her opinion but will endeavor to outwit her through the cunning so characteristic of the insane. If the

nurse does not understand or appreciate the vast difference existing between the management of these two classes of patients she should not accept the charge of them.

Absolute fearlessness is the first essential in the care of the violently insane. With this quality a sane mind can always hold the insane one in abeyance—according to the law of the power of mind over matter—but when once fear is shown the maniac will control the field. When a patient becomes violent, the nurse should grasp his elbows from the back, pinion them to his sides by firmly pressing them and thus walk the patient in front to the bed, chair, or place required, not relaxing the firm hold for a moment. A human being with the mind diseased is akin to the brute creation and should receive the gentle but firm treatment shown to brutes. Any maniac can be managed as the dog, horse, or lion, according to the strength of the mad spirit possessing him and any one however wild must and will yield to the quiet, firm persuasion of the sane mind and the supreme power of the calm human soul.

Compulsion should only be resorted to in the case of personal violence and for self-defense. The following also are aspects to be avoided in the management of the insane: suspicion of their actions, argument, contradiction, violent remonstrance (or, of course, weak and timid submission), deception used toward them, contempt, etc. As soon as a semblance of disturbance from any cause arises, the nurse should be able to detect it immediately and use all her tact to inquire into the cause, foresee the result, and at once supply the antidote. An insane patient should never be able to discover that any one considers him "crazy," especially his attendant, keeper, or nurse. He should be treated and regarded as a rational being and when violent and prone to destroy objects should be dealt with

firmly and fearlessly. He should not be reproved for his conduct but objects should be placed beyond his sight and reach.

In the case of rejected food or medicines the nurse may usually overcome the patient's fear and repugnance by first tasting the food herself. Even when it is necessary to feed with the stomach pump that disagreeable treatment may be made less difficult to bear if the nurse observes toward her patient a gentle and cheerful demeanor.

For the type of insanity termed melancholia talking is of little avail. Such a patient may be much more easily led to obey by a silent sympathy and compassion which enters to a certain degree into the mood of the patient. Almost every office required of these patients may be explained to them by pantomime, the thought conveyed to their diseased minds by gestures and expressions of countenance.

Improbable and impossible yarns and tales of the "loquacious insane" should be listened to without comment—for comment would encourage the disease—but with the utmost degree of attention. The babbling of the "innocent," the hopeless idiot, should be controlled by the aid of playthings and books to divert the vacant mind. The indecent behavior and obscene language of the "malicious insane" should be treated with the utmost indifference. Appearing shocked or offended would have the effect of increasing the desire.

A few words quoted from the diary of a hero who lived and died among the insane and who always showed the utmost pity and compassion for them, will conclude this interesting but unfathomable subject :

"It is better that every disturbance of the senses and of the mind should be avoided. There is no entertainment to fascinate their benighted spirits; neither words, books, nor other

objects will soothe the rebellious soul, now roused to madness, now languishing in the body shattered by disease. A perfect cure alone will bring comfort. Rest and relief will return to the mind only when the body is restored to health."

The nursing of children is the most difficult branch in the profession. While it is true that in the nursing of all cases it is requisite that the nurse be conscientious, patient, and gentle, it is vastly more important in regard to children. Many a tale of injustice, harshness, aye, even of cruelty, might have been brought to light could the little ones have known how to express their experiences. With children, nursing should be a labor of love throughout. They are silent usually when they love or fear and when questioned become embarrassed in either case. In the case of fear they hang their heads looking furtively up at the nurse who has threatened them with all unknown horrors if they mention or breathe their unhappiness. The very same expression would appear on the little faces when their hearts are overflowing with affection for the nurse who never willingly lets them suffer and when she cannot help them mingles her tears with theirs while she tries to quiet the pain.

Children do not understand the reasons for illness or the cause for suffering, and nothing is more pitiful and heart-rending than to see and to be unable to help the suffering little ones when they glance appealingly for aid to those who are caring for them. It rests entirely with the conscience of the nurse to make the children in her ward happy or most deplorably wretched. They would not attribute a night of discomfort and pain to the neglect of the nurse or be aware that they suffered because of medicines omitted; or that the nurse was to blame because their breakfast tasted bad—she perhaps having carelessly given

milk that had been uncovered in the ward all night instead of the good fresh milk from the refrigerator. Nor can the poor little ones understand why they cannot help being cross and irritable when they wake up in the morning; nor can they comprehend their inability to keep out of mischief and the irresistible desire that possesses them to break the little rules of their ward and annoy the nurse in every way. The nurse on her part should understand these things and, instead of being harsh with those miserable little patients, the thought of the many inherited weaknesses which they are unable to overcome should only arouse her interest and sympathy to a greater extent.

The preliminary preparation of the operating room—sweeping, dusting, and washing with a 1-1000 solution of bichloride—has already been discussed (page 126) but the importance of this part of the nurse's work cannot be emphasized too much. Before every operation the room and all that it contains should undergo a thorough and systematic antiseptic preparation. This accomplished, the windows and doors should be tightly closed and kept so until the patient is removed after the operation.

The room should contain no curtains, shades, carpets, rugs, or drapes of any description. The furniture should consist of a table for instruments, another for the sponges, and still another upon which to prepare the dressings, one chair, a washstand, a full toilet set for the use of the attendants, a cupboard for instruments, three slop jars or tin or wooden pails for waste water, a large tin wash boiler, a gas stove, three or more pitchers of good size, a large dipper, three wash-bowls, three tin wash basins, one new nail brush, one piece of soap, one box of matches, one rubber mackintosh. The

tables for utensils should be small enough to move and lift easily. The cupboard should contain plenty of shelves, and the doors should be of glass.

Linen, as follows, should be prepared : Three half blankets, one half blanket cut in quarters, a piece of rubber sheeting the size of the half blanket, also cut in quarters, a loose pair of flannel drawers and a pair of rubber ones of the same size, four sheets, two pillowslips and two pillows with rubber coverings, three dozen towels *without* fringe, and an extra nightdress for the patient.

Linen.

The following drugs and necessary articles should also be on hand : One pound of absorbent cotton, one pound bichloride cotton, one pound roll of iodoform gauze, one pound bichloride gauze, two ounces iodoform powder in a box with a perforated top (pepper shaker), three half-pound cans of ether (*fortior*), a penknife, two ether cones—made of towels and cardboard—one yard of rubber adhesive plaster, two yards of adhesive plaster, an alcohol lamp, a razor, a piece of Castile soap in soap dish (to be kept in cupboard especially for shaving), one pint bottle of pure carbolic acid, eight ounces of bichloride (strength of solution so that one fluid ounce added to one pint water, will make one pint of 1-1000 solution bichloride), a hypodermic syringe (in good working order), a one ounce bottle each of pure ether, aromatic spirits of ammonia, spirits of camphor, pure alcohol, sherry, brandy, whiskey, a small amount of Monsel's solution, a small bottle of balsam of Peru, a graduated glass, a teaspoon, a pitcher of iced or cold water and glass, three rubber bags for hot water, and two or three large aprons for surgeons and assistants.

Drugs, etc.

Preparations for the operation enumerated in the fore-

going pages should be in readiness the day previous to that of the operation. The doctor usually orders a mild laxative for the patient the night before, and a tepid bath with Castile soap. He may also order ten grains of potassium bromide to prevent excessive nervousness. If the patient is weak or even if tired the bath should be given in bed. She should not be required to lie down if suffering at all from dyspnoea, but should be carefully protected from draughts and propped up with pillows in bed or in a chair with feet up, if that position gives more comfort and rest.

The nurses who expect to attend the operation as well as the one to whom the patient is to be intrusted after the operation, should wash their heads the night before. A silk or linen handkerchief should then be arranged over the hair, so as entirely to protect it from contact with the air.

On the day of the operation the nurse should again wipe the room and everything in it with a damp, soft cloth wet with a 1-1000 solution of bichloride, and at the same time she should arrange everything systematically that she may be able to lay her hand at once upon any article required. Having previously ascertained the particular antiseptics to be used both for the incision and the instruments, she should prepare and place them upon the table upon which she intends to have the basins and sponges. The washstand should be supplied with bowl and pitchers, hot and cold water, soap, nail brush, and towels, a bottle of 1-1000 bichloride and a small bottle of aromatic spirits of ammonia. The wash boiler should be filled with boiling water and kept covered. The water should be boiled in tin. The razor, Castile soap in the dish, and a cup of hot water placed beside it with a small piece of absorbent

cotton,—all these should be arranged on a small tray in readiness for the doctor, should he wish to shave over the part upon which he is to operate.

A dozen towels should then be laid in one of the porcelain wash-bowls and enough hot 1-1000 bichloride poured over to cover them. These are then Care of instruments. ready to be placed about the patient. The trays are now placed upon the table for instruments, which is left for the surgeon to place as best suits him. The nurse may at this time know where to place the table containing the sponges and basins. All the tables should be covered with towels without fringe—a fringed towel should never under any pretext be allowed inside the operating room. As soon as the nurse learns what instruments are required, she should immerse them in boiling water, excepting those with handles (an abomination rapidly becoming extinct), then lay them in an orderly manner upon the trays and cover them with the solution ordered—generally 1-40 carbolic acid. Instruments that have any hard or soft rubber in their composition must not be immersed for any length of time in carbolic acid—even 1-40 is rather strong and has a tendency to eat the rubber. Steel and other metals should not be placed in bichloride solutions as they become corroded and so unfit for use.

The patient on the morning of the operation should have for breakfast one half cup of milk or the same amount of beef tea, after which the nurse Patient's food before operation. should prepare her for the operation as follows :

She should first give the patient a rectal enema of soap and water; next a vaginal douche, if ordered; if not, she should wash the parts with a weak solution of bichloride; next, an entire bath of 1-4000 Final preparation. solution of bichloride, warm. The hair should be combed

and brushed smoothly, parted down the middle of the back of the head and brushed to each side behind the ears. Then it should be braided firmly and smoothly. If this is properly done it need not be touched again for several days and will not become snarled. The patient should retain none of her clothing except the stockings and nightdress, but if the weather is cold the undervest may also be worn if preferred. If the patient is determined to retain any article of clothing the nurse should not insist contrary to her desire at such a time, but should see that the article is removed when the patient is under the influence of the anæsthetic. If the patient has false teeth or hair these should also be removed. The very last thing before receiving the ether the patient should be asked to urinate. Usually this is not difficult, as nervousness generally causes an increased desire to urinate; if, however, this should not be the case the nurse should catheterize her, unless she

Preparation
of the field of
operation.

knows the cause of the operation lies near or in these parts. Obviously she should not then use the catheter. When all else is in readiness and the patient has had her full bichloride bath, the part to be operated upon should be shaved and then thoroughly washed with the following solutions: (1) with soap and water; (2) with alcohol; (3) with ether. Absorbent cotton should be used for each bathing process. Lastly a towel wet with bichloride solution (warm) should be laid over the part, a piece of cotton laid over that and loosely bandaged to keep it in place. This remains until the surgeon is ready to operate.

The nurse's
bath and
clothing.

It is almost as necessary for the nurse to be aseptic as for the patient. Therefore, as soon as the other preparations have been made, she herself should take a bichloride (1-4000) bath and change her

linen throughout, after which she may remove the covering from her hair. Her hands need particular attention, soap and water alone will not destroy The nurse's hands. the germs. The hands should be first washed in hot water, using soap and a nail brush, then in a solution of alcohol and ether; after carefully cleansing the finger nails and subungual spaces, they should finally be washed in a solution of bichloride, 1-1000.

Operations conducted according to aseptic principles require constant and strict vigilance regarding During the operation. even the minutest rule pertaining thereto; for it is with antiseptics as in the ancient law on the tables of stone, whoso shall keep the whole law and yet stumble in *one* point is guilty of all. Before the aseptic precautions were conceded to be of special importance in surgery, many acts, now considered most heinous, were then thought quite legitimate; as, for instance, using a needle for the patient without first making it aseptic. Another example is using a sponge again after having let it fall to the floor. The surgeons who believe in the good of antiseptics are most conscientious in the observance of the minutest laws of that science.

In order that everything may be properly attended to during an antiseptic operation, there should be at least three nurses in attendance in the room and one outside the door to attend to any order given her. Each nurse should know just what *rôle* she is to assume during the operation so that nothing may occur to destroy the perfect order that should prevail. Every chief nurse has of course her own ideas regarding the management of operations. The following arrangement is given more for Duties of the nurses. the help of nurses in private and district work, who must perforce use the material at hand. Her assist-

ants often are people who have not the remotest idea what nursing means or how vast an education it requires.

The first nurse. The first titioners in the training school, should sit outside the door of the operating room, ready to empty the buckets of slop water, to bring fresh boiled water, and to run errands if necessary.

The second nurse. It is the duty of the second nurse to stand by the physician who administers the anæsthetic and to deliver messages to the nurse outside.

The third nurse. The third nurse should make the antiseptic solutions, should see that the instruments and sponges are placed nowhere but on the bichloride towels, the instrument trays, or in the antiseptic solutions. If any article should fall upon the floor it is her duty at once to place it out of sight and see that it is immediately replaced by another. She should arrange the basins on the table at her side and the antiseptic solutions and boiled water, hot and cold, within reach. She should also stand within easy reach of the doctor, that she may place the fresh sponge in his hand when needed and reach for the one used, should he forget to hand it to her.

Three basins and three sponges *only* should be in use ; the basin into which the soiled sponges are placed should contain pure water ; the other two the antiseptic solution ordered. The sponges should be thoroughly cleansed in the pure water and all bits of fibrin, mucus, bone, etc., taken from them. They should be washed through the second water and placed in the third basin and wrung from it and handed to the surgeon. The sponges should be wrung almost dry, unless the surgeon orders differently ; a soppy sponge is almost useless excepting at the end of the operation when the cavity of the wound is washed out. The water for that

should be quite warm, about 105° or 110°, and clean. The nurse *must* keep track of the sponges and if the surgeon tears one into small pieces, she must take note of it, for she would be to blame if a sponge was left in the cavity after the incision had been sewed up.

The head nurse attends to the wants of the surgeon and his assistants, watches the work of the other nurses, and the condition of the patient, and is responsible for the general good management of the operation. The head nurse. A careful nurse will allow no conversation among her nurses and will herself speak only when addressed by the physicians. Her nurses are trained to understand her orders through pantomime. It is her duty also to attend to the patient's position upon the operating table. Just before the surgeon is ready to make the incision the head nurse will throw the blanket completely over the patient, excepting the head—which is laid carefully upon a low pillow pulled well under the shoulders, the hair hanging down each side and a large towel being placed under the chin in case of vomiting. While the other nurses go about the work ascribed to them she will arrange the patient. After reaching under the blanket and rolling the night-dress and undervest well up under the shoulders to save them from secretions and blood, she, then, still working under cover, will draw on the blanket and rubber drawers and tie them just below the hip joint with a drawing string. She will now ascertain the position required and arrange the patient as ordered. Then the remaining two pieces of blanket and mackintosh come in use. In case Sims' position is desired one piece, with the rubber sheeting on top, is placed beneath the buttocks, the other piece over the abdomen and chest. The blanket at first covering her may then be drawn away. In the case of

a laparotomy one piece should be laid across the pubes, the other above the umbilicus. In any case only the part to be operated upon should be exposed and the mackintoshes on and about the patient should be overlaid with wet bichloride towels which should be changed at intervals when soiled and when the nurse can change them without interfering with the surgeon's work. At an opportune moment the nurse should inquire what dressing is required if she does not already know, and prepare it so that it will be in readiness when needed. The patient's bed should be ready in a different room from that in which the patient was prepared for the operation. It should have been previously fumigated and made aseptic in every particular. About fifteen minutes before the close of the operation the nurse at the door will be ordered to place hot bags in the bed in case of shock. It is the duty of the chief nurse herself to see her patient well out of the many dangers consequent upon an operation.

CHAPTER XXI.

FOOD FOR THE INVALID—THE INFANT'S FOOD.

THE PHILOSOPHY and physiology of all kinds of food should be thoroughly mastered by the nurse, in addition to the following: the proper discrimination between the quality and quantity of the goods bought, added to the ability to form a correct judgment of their worth; and moreover a knowledge of the best manner of preparing and serving every article of food. All of the above suggestions are of the utmost importance, and all points appertaining to them noted in this chapter should be studied carefully.

The classification of the various foods has been for a long time a mooted subject among scientists—with the usual result of a puzzling labyrinth of words and theories, useless and incomprehensible for practical learning. For this reason the division used here is a “gleaning” of that which is practical and useful out of all the various classifications.

Food, or aliment, with its varied organic (animal and vegetable) and inorganic (mineral) ingredients, is a never-ceasing necessity to the life growth and energy of the whole organic creation. As there exists a continual wear and tear in every organ as well as in the framework in every organic body there must exist a corresponding formation and repair. This is especially

Necessity of
food.

true with regard to the ravages of the various diseases peculiar to the human race. This need is met to a great degree by food through the medium of blood (see process of digestion). The purity of this very important fluid depends largely, in its turn, upon the timely and proper use of the foods that go to make up its various parts. Therefore, the nurse cannot be too particular regarding the quality, quantity, and preparation of every article of food ordered, and her knowledge of them and their characteristic effects upon the various disorders for which they are ordered. The flagrant disregard of their power for ill as well as good brings results that all are compelled to witness daily in the numerous cases of indigestion, dyspepsia, and hepatic diseases.

There are two fundamental principles into which aliment may primarily be divided: the organic and inorganic principles. The organic principles are divided into nitrogenous (animal foods, meats) and non-nitrogenous, which can be subdivided into hydrocarbons, or fat foods, and carbohydrates, sweet and starchy foods.

The inorganic principle in foods consists mainly of the salts and water and it is as important to the sustenance of life as the organic parts of foods.

The nitrogenous part of foods goes to the formation and the building up of the various tissues and also the manufacture of the secretions and excretions required in the human system, in this manner helping the organic portion of foods to fulfill their ends. The hydrocarbons go to make up the heat and force required by the human system. The carbohydrates—starch, gum, sugar, etc.—are the fat producers and contribute somewhat to the production of force.

With the exception of milk, which contains almost all the nutrients necessary to life, foods of every kind in a greater or lesser degree contain one or more organic and inorganic substances. Therefore, the physician's order regarding diet should be strictly obeyed by the nurse. The food should also be served as temptingly as possible that the patient may enjoy it, thus adding greater aid than is usually supposed to the recovery of health.

The different diets ordered for all the various diseases will not be specified here as one theory after another causes constant changes regarding diets—making it impossible to determine upon any one set of foods during disease. There are exceptions to this, of course, in diseases like diabetes. The diets for such cases will be especially noted. Concerning the latest theories upon foods for different diseases, the nurse's observation and a few timely and judicious questions upon the subject will enable her to obtain all the information she requires.

Changes in
theories re-
garding
diet.

The following is a carefully prepared table of the foods in general use, not particularly for invalids; the complete table is given that the nurse may judge from it what foods she should avoid altogether and what she may use sparingly, and also what she may give the patients with ordinary discretion at any time.

FOODS EASILY DIGESTED.—*Meats*—Beef, roast, not overdone, steak, tender and rare, broth, beef tea; lamb, broiled or stewed or broth; chicken, stewed or broiled, soup or broth; turkey, roast; sweetbreads, stewed, baked, or broiled; trout, baked, broiled, or boiled; oysters, steamed, baked, or stewed; calves' liver, broiled and chopped fine, served

with mustard. *Vegetables*—Peas, boiled, soup ; cauliflower, baked, boiled, or stewed ; coleslaw, raw cabbage ; rice pudding without eggs, boiled rice, rice soup ; mushrooms, cooked and served with meats, boiled, baked. *Fruits*—Oranges, raspberries, peaches. *Miscellaneous*—Eggs, soft boiled, poached, baked, raw (yolk and white beaten separately), scrambled, hot omelet ; pure butter, stale bread, dry toast ; skimmed milk, hot milk pure or skimmed, pure cream on fruits and other dishes ; custards.

FOODS BUT PARTIALLY DIGESTIBLE.—*Meats*—Mutton, fresh pork (cooked well), duck, salmon, calves' liver, terrapin, lobster. *Vegetables*—Potatoes, beans, cabbage, carrots, squash, sweet potatoes, celery. *Fruits*—Apples, currants, strawberries, blackberries. *Miscellaneous*—Melted butter, hot breads, and hot cakes, fancy cake, cheese, puddings.

FOODS DIFFICULT TO DIGEST.—*Meats*—Veal, ham, game, goose, salt fish, clams, kidneys, sardines, calves' brains, fried oysters. *Vegetables*—Cucumbers, radishes, turnips, eggplant, oyster plant. *Fruits*—Pineapples, pears, cherries, plums, bananas. *Miscellaneous*—Pies, pastry, bad butter, batter cakes, fruits fried in batter, doughnuts, crullers, buns, drawn butters, mayonnaise dressings, all boiled puddings.

Milk is universally used by man as a standard food in sickness and health ; in sickness it is indispensable. The following ingredients are found in cow's milk that of milk. has been skimmed : phosphate and acetate of potassa, lactic acid, lactate of iron, chloride of sodium, butter, sugar of milk, casein, water, and earthy phosphates. The cream is formed of casein, whey, and butter ; the whey contains sugar of milk and salts. When milk is placed under the microscope there will be seen floating in a colorless liquid—*liquor lactis*—a large number of oily globules, of

various shapes and sizes, the largest size about 1-12800 of an inch in diameter.

After milk enters the stomach it is acted upon by the gastric fluids and is coagulated by them. This ^{Digestion of milk.} coagulum, containing much nutrition, is digested like any other solid food and the watery parts are absorbed. When milk is taken into a stomach too weak to digest it, it is sometimes rejected by the stomach and is vomited in huge lumps, heavy and indigestible; hence the necessity of observing care not to give to weak stomachs the pure milk. In the case of perfect health also great care should be observed in drinking milk. If taken pure it should be sipped slowly, that a slight amount of saliva may be mixed with it. The reason of this necessity will be obvious if the above explanation is understood—that milk after entering the stomach loses its liquid properties and becomes a solid food and must be digested as such; thus swallowing milk hurriedly and in large quantities is virtually the same as swallowing solid food without properly masticating it. It is dangerous also for people in health when overheated or hungry or under strong emotion of any sort to drink milk.

The milk of the goat, ass, and mare is sometimes ordered by physicians for certain conditions of ill health. The reason of this is, that the various constituents of milk, although the same in number in the different *mammalia*, differ in quality and relative quantity.

Goat's milk resembles cow's milk except that the butyrateous matter is more solid. Artificial goat's ^{Goat's milk.} milk is made by cutting one ounce of fresh suet into small pieces and putting it into a muslin bag, so large that the pieces will not be squeezed at all. Boil in two pints of new cow's milk and sweeten with an

ounce of white sugar candy. This also is often used for consumptives.

Human milk contains more sugar of milk and cream and less casein than cow's milk. Its composition differs greatly according to the length of time from delivery.

For solidified milk take two pints of milk and one half pound of white sugar; let it evaporate to dryness and when redissolved in water it has all the qualities of fresh milk with the addition of the sugar.

Heat the required amount of milk nearly to boiling; for a cupful use a teaspoonful of sugar. Pour into a large glass and fill with soda water.

For a mixture of milk and whiskey fresh milk, sugar, and one half ounce of whiskey or brandy are needed. The sugar and stimulant should be first mixed in the glass and the milk added. The whole should be poured from one glass into another five or six times to bring a froth. Hospitals have tin cups for this in the shape of a glass the one fitting into the other an inch or more for shaking. Nutmeg or other spices are sprinkled over the top according to taste. An egg is sometimes added. This should first be beaten to a stiff froth, the yolk added to the liquid; the white may be sweetened and spread on top. This is especially good if the white is first browned in the oven before placing on the top.

When the physician orders milk peptonized he will also give the nurse a prescription which calls for a box of powders; these powders contain each about five grains *extractum pancreatis* and fifteen grains bicarbonate of soda. One powder will peptonize one quart of milk. The milk should be freshly peptonized every twelve hours. Have ready one pint of fresh milk, one-quart glass

jar, three quarters of a cup of warm water, a spoon, and the powders. Heat the milk lukewarm ; mix powder in the water, pour the milk into the jar, and then pour in the powder and water ; shake well and place in a saucepan one third full of water at 105°-110° for one hour or until the milk begins to taste bitter. The milk will then be thoroughly peptonized and must be placed upon the ice at once to prevent further digestion. If the milk is preferred or ordered to be given hot, bringing it to the point of boiling will also stop the peptonizing process. Peptonized milk will taste slightly bitter.

Koumiss, fermented milk, requires for the making catsup or beer bottles, a cake of yeast, sugar and milk.

Koumiss.

Fill the bottles three quarters full of fresh milk.

add a pinch of Fleischman's yeast dissolved or a tablespoonful of brewer's yeast, and one tablespoonful of white sugar. The sugar should be dissolved in water and boiled only until it becomes a syrup but *not* until it is candied. Shake the bottle well for a half minute or more. If it is not within two inches of being full, add the required amount of milk, and shake well again. The bottles must all be corked tightly using corks at least one quarter too large. In order to accomplish this, the corks must first be soaked in hot water to make them yielding. They should then be pushed well in and tied in a certain manner. The bottles should be kept for two and one half days at a temperature of about 58° or at a temperature of 64° for one and one half days, in a standing position, after that on their sides in the refrigerator or in a dark cool cellar. The temperature for making will be easily procured in winter, in summer the refrigerator will be the best managed. Koumiss will keep any length of time if kept in an even temperature of about 56° but it is better for the nurse to make a fresh amount once weekly.

Buttermilk in nutrient qualities is on a par with skimmed milk ; it is good for the convalescent but doubtful in its benefit in fever because of its tendency to create flatulence. Koumiss, milk peptonized, or fresh skimmed milk is preferable.

A glass of pure cream with a salt cracker or a crust of fresh bread is a good lunch between meals for a hungry convalescent.

Water should be pure, but is, as met with under different circumstances, in various states of impurity, impregnated with numerous chemical and vegetable particles in various conditions of putrefaction ; hence the most particular nurse cannot be too particular regarding the manner of using both water and ice. Boiling is the only way to destroy the germs in water—to be sure it destroys the life as well, but it is better to drink dead water than to run the risk of dying because of its superfluous life. When the nurse has the slightest reason to suppose the water to be impure she should say nothing to the patient but mention the fact to the physician, who will then give directions regarding its purification.

Distilled water (*aqua destillata*) is sometimes prescribed and is occasionally ordered for use in a certain sort of diet where it is especially important to avoid the use of impregnated water. It is also a neat practice for the nurse to have on hand a small amount for hypodermic use. Distilled water is condensed steam, which druggists prepare in large quantities, but the nurse may prepare a few ounces by having a tube made of tin, curved, and about three feet long. She may fit one end of this to the spout of a kettle and place the other end in a vessel covered with cardboard, the tube passing through the covering. This covering is necessary to exclude the

germs. The bowl into which the condensed water drops should be placed in a vessel in which is cold water. This keeps the liquid from again vaporizing.

For cream of panada, put in a saucepan a slice of bread of any sort, white, brown, or graham, without crust; pour boiling water over it and let it simmer about five minutes; remove the bread from the water with an oyster dipper and put it into a warmed bowl in which has previously been placed a small piece of butter and a pinch of pepper and salt; beat well with a fork, adding enough of the toast water from the saucepan to make it the consistency of cream. Serve hot. Sugar and spices, or an egg boiled hard thirty minutes, the yolk mashed with a fork and seasoned, or little bits of cooked chicken mashed well and thoroughly beaten with the bread make appetizing changes. All the above varieties may be thinned and served as a gruel or thinned still more and served as panada water. Toast water is made by pouring boiling water on nicely browned toast with no crust, until it is covered, and letting it steep until cold. It should then be covered with a plate or it may steep upon the stove an hour or more. Strain and serve hot or cold and add the flavor desired. Apple water is made the same way as toast water, except that a fine ripe apple, pared and sliced, is used.

Cream of
panada.

Toast water
and apple
water.

Three fourths of a bowlful of the fruit of the tamarind (Indian date) is covered with hot water and allowed to stand until cool. If it be stoned and strained it will be a pleasant gruel. It acts as a laxative.

Tamarind
gruel.

To about a handful of any variety of barley previously washed add one pint of water and let it boil down one half slowly, after which it may be seasoned with sugar and a few drops of lemon juice or

Barley water.

with small pieces of sweet orange, ground licorice root, etc.

Beat one half cup of ground rice into milk enough to
 Rice milk. make a thin batter ; then add one half pint of
 milk and let it boil slowly five minutes. It
 may be served hot or cold and flavored as barley water.

For colds, an old time remedy with a ridiculous name is a
 "A stewed Quaker" mo-
 lasses posset. stewed Quaker molasses posset. It is a very
 soothing and pleasant drink, made as follows :

Let simmer slowly for a half hour one half pint
 of best molasses, one drachm of powdered white ginger, and
 a lump of butter. This should be stirred frequently and
 should *not* come to a boil. After removing it from the stove
 stir in it the juice of two lemons or one ounce of good
 vinegar, cover, and let it stand five minutes. It may be
 used hot or cold. It must not be kept in tin.

Honeyed oil is another good and harmless remedy for a
 Honeyed oil. cough, especially for children. Mix together
 one half ounce of olive oil, the juice of a lemon,
 and a pint of good strained honey. One drachm may be
 taken whenever the cough is troublesome.

For flaxseed tea use two cupfuls of cold water to one half
 Flaxseed tea. ounce of whole flaxseed. Boil slowly until the
 mixture is about as thick as cream. Put into a
 china bowl four ounces of pulverized sugar (candied is best)
 and one ounce of pulverized gum arabic ; pour the flaxseed
 over this and stir until all is dissolved ; squeeze into it the
 juice of a lemon ; then strain.

Soda water as good as that obtained from drug stores and
 Soda water. much cheaper, may be made as follows : Fill a
 soda bottle (a siphon) or a large wine or catsup
 bottle with spring water. Pour in forty grains of bicar-
 bonate of soda and thirty grains of tartaric acid in small
 crystals and cork and tie firmly.

Seidlitz powders consist of two separate powders. In one paper (usually blue) are forty grains of bicarbonate of soda and two drachms of Rochelle salt. The other paper (white) contains thirty-five grains of tartaric acid.

There is but little nourishment in whey, but compounded with other food substances and with flavors it is a good stimulant and is often used when the stomach needs rest. Wine whey is composed of two glasses of sherry or any good white wine, a dessertspoonful of sugar, three fourths of a pint of milk, and enough water to make a pint of the whole mixture. Let the milk and water come to a boil; then add the sugar and wine and stir constantly for ten minutes and then strain. A quicker way is to let a pint of milk come to a boil, then add a glass of sherry (it will be better to add also a glass of any good *homemade* wine); set it off the fire after again coming to a boil. Do not stir it after moving it from the fire. After five minutes strain and sweeten. A tablespoonful of liquor rennet to a quart of milk, lukewarm, is used for rennet whey. Cover the bowl and set it on the stove in a warm place. The curds will form in about twenty minutes; then strain and season. The curds are good to eat flavored with wine, etc., but should not be given to the patient. Instead of the liquor rennet, a piece of the solid rennet two inches square may be used. This must be soaked over night in a little water and then used in the same way as the liquor.

To a pint of lukewarm milk add a tablespoonful of sugar and flavoring. Pour in a teaspoonful of rennet and stir very gently, just enough to mix it, and place upon ice or in the cold. It will be ready to serve in fifteen or twenty minutes.

All sorts of jellies in winter and all sorts of fruits in sum-

mer, mixed with water ; whey ; all thin, strained gruels
 Mixture made from any of the health foods, are most
 drinks. palatable and harmless if carefully strained so
 that no seeds or hard substances remain in them. As they
 are all made in about the same way, it is useless to give each
 one separately. When jellies and fruits are hard, boiling
 water is needed to dissolve them. Melted sugar, boiled just
 so that it does not candy, and fruits, boiled and sweetened
 but not jellied, make delicious drinks when mixed with
 water.

Tea is a stimulant and should not be given to patients
 without the doctor's permission. It contains
 Tea. the following chemicals in different proportions:
 theine, volatile oil, gluten, tannic acid, starch, gum, fat,
 etc. It is best to obtain tea directly from an importer,
 thus avoiding the various, and in this age, almost univer-
 sal adulteration with stale moldy tea, small chips, dried
 leaves, etc., mixed by unscrupulous traders with their
 freshly imported goods. Tea may be bought by the quarter
 chest and will keep admirably if in a dry place. Good
 green tea will retain its color when made ; black tea has a
 pleasant fragrance like that of flowers.

Tea should *never* be boiled. It should be made in a china
 How to make or porcelain teapot, for the chemicals in it will
 tea. act upon tin, not only causing the beverage to
 lose its flavor but making it injurious to the system. For
 making tea the following utensils will be required : a
 kettle, a porcelain teapot, a strainer, and a china teapot.
 These with the other accessories—cup, saucer, cream, sugar,
 etc.,—should be placed upon the tray. If there is a fireplace
 in the sick-room it is pleasant to brew the tea there ; if not,
 it should be made in the kitchen. If the water does not
 boil constantly while making, the tea will be weak and

insipid. The amount of tea used should be two teaspoonfuls for each person, or two and a half teaspoonfuls to a pint of water. The porcelain pot should be thoroughly scalded, the required amount of tea put in it, and the boiling water poured over it. Set the teapot aside and if there is no cozy a towel or napkin should be thrown over it. The tea should steep six minutes and at the end of that time it should be strained into the china pot, which should first be scalded, and the cozy or napkin placed over it. A pitcher of boiling water should also be on the tray, in case the tea proves too strong.

Coffee, like tea, is a stimulant besides a mild laxative to most people. It contains in different proportions the following ingredients: caffeine, volatile oil (natural), empyreumatic oil (from roasting), a variable but important constituent, gluten, a very slight astringent principle, fat, and extractives.

Coffee.

Coffee should not be ground until ready for use and should frequently be obtained freshly roasted and kept tightly covered. For a cupful of medium strength, use one tablespoonful; for strong coffee use double that amount. Coffee should be boiled very little; the more it is boiled the weaker it becomes. It may be made in tin. There are two ways of making it; that made in the easiest way is called French coffee. This is made in a biggin, a tin coffeepot with a fine and a coarse strainer inside. The biggin is scalded first, the coffee then placed in it next to the coarse strainer, and boiling water poured in. The pot is tightly covered and set aside, and the coffee is finished when the water has soaked through both strainers. This needs nothing for clearing. The other way is as follows: the coffeepot is scalded and the water poured in, set upon the coals and when boiling hard the coffee is thoroughly stirred in the water one spoonful at a time.

How to make coffee.

Now a few chips of isinglass are added or a little white of egg. It should be stirred frequently until boiling. It is then pushed back and for five minutes allowed to simmer. A small amount of cold water is added to settle it thoroughly. It is then ready to serve. Coffee is more wholesome if taken clear. Milk causes it to be indigestible and spoils a cup of coffee, however well made. If cream is used it should be very rich ; thus but little will be needed and it will turn the coffee a beautiful golden brown.

Chocolate, on account of its adulteration and the flavoring, consisting of vanilla and sugar, is indigestible. Chocolate and cocoa. Cocoa, being the pure ground bean, is a more digestible and nutritious drink than either tea or coffee, containing little or no tannin and plenty of albuminoid and fatty substances.

The preparation of chocolate is similar to that of cocoa. If How to make cocoa. obtained in squares chip very fine, and, while the required amount of milk and water (in equal quantities or one third water) is coming to a boil, the cocoa should be made into a paste with a little hot water and sweetened according to taste. When the milk and water boils, add the cocoa and sugar. When it boils again it is ready to serve.

Fancy dishes may be made with coffee and chocolate, as preparing a raw egg as for an eggnog and pouring it over a cup of coffee or chocolate or baking a custard with an icing and laying it on top the cup. Ice cream with hot coffee makes a delicious summer beverage. The white of an egg and sugar may be beaten through the coffee.

Lemonade and orangeade. For lemonade in large quantities use one half pint of lemon juice to one and one half pints of water. This will require one dozen lumps of sugar or four tablespoonfuls. For a single glass

one lemon and four lumps of sugar or one tablespoonful are sufficient. Fill the glass with mashed ice or half ice and water. For orangeade substitute orange juice for lemon in the above recipe.

Essence of lemon or orange is made by rubbing the rinds of ripe lemons or oranges with loaf sugar until all is rubbed off. Mix the sugar and rind together and pack closely in little jars or glasses. It is used for flavoring drinks and desserts.

Essence of
lemon or
orange.

The juice from the fruit used as above may be poured over a pound of powdered loaf sugar, bottled, sealed, and kept in a dry place.

Take a quart bottle of very best porter and mix it with four quarts of water, a pint of molasses or clear honey, and a tablespoonful of ginger. Bottle with good corks and tie. It will be ready for use in four days.

Bottled small
porter.

Fill a glass with wine and water, hot or cold, using one third wine and two thirds water. Add loaf sugar to sweeten and nutmeg or cinnamon on top. Negus is the same as above with a tablespoonful of lemon or orange juice added.

Sangaree and
negus.

Put one half a glassful of cider or wine of any sort with a teaspoonful of ground cloves in a saucepan to boil; while this is heating beat an egg in the glass until very light, adding sweetening. When the cider or wine has boiled pour quickly over the egg and sugar, stirring rapidly, and then sprinkle a little nutmeg on top. If preferred, the cloves may be omitted. Mulled buttermilk may be made in this manner without spices.

Mulled cider
and mulled
wine.

Put all the juice, pulp, and rind (leaving out the seeds and white rind) of four lemons into a saucepan in which there is a pint of boiling water. Also add to it two teaspoonfuls of the best raw green tea.

The princess
punch.

Let all boil together for ten minutes and then strain through linen. Stir into it a pound of loaf sugar pounded and a bottle of wine of any sort. Champagne is best for this but other wines are good, only a trifle heavier. When it again reaches the boiling point it is ready to serve ; it is palatable either hot or cold.

Grate the rind of one orange and one lemon upon a dozen lumps of sugar ; then squeeze all the juice upon it ; cover well and let it stand until the next day. Strain thoroughly, add a few ounces of wine, and beat lightly the whites of two eggs and add to it and serve.

India punch is the same as "Pompeii punch" except that it is not necessary to let it stand over night. The champagne or other wine may be added at once. A small amount of the flowers of benzoin (about two scruples) steeped in whiskey or brandy will make a pleasant flavoring for this punch. This is largely used in the English and American settlements in India.

Powder eight pounds of loaf sugar ; mix with it three pints of water and three well-beaten eggs together with the shells. Stir the whole mass vigorously and boil twice, carefully skimming it each time. Strain and add two glassfuls of orange-flower water ; bottle carefully. This is an excellent drink for invalids in the summer ; there may be added a little lemon juice and sweetening.

Pound together a pound of shelled bitter almonds, an ounce of nutmegs, a pound of fine loaf sugar, and one grain of ambergris. Infuse these ingredients for a week in a gallon of white brandy or proof spirits ; then filter and bottle for use.

All lemon and orange peel should be saved and placed

in a demijohn of brandy and water in equal quantities. Kernel stones should be pounded a little before being put in the brandy and water. These are Plum, peach, and lemon brandy. favorite drinks for prostrated patients besides being medicinal.

The grated rind of three large lemons, one pound of shelled bitter almonds, blanched and broken, Niloya punch. and one half pint of honey are boiled together and skimmed. Add three pounds of the finest loaf sugar. These ingredients are poured into a demijohn in which is a gallon of the best brandy (white) or proof spirits. Cork the demijohn tightly and let it stand in a dry place for three months. It should be shaken well every day for the first month. Filter and add rosewater, quart to quart, and bottle it for use. This and other cordials may be colored red, after the filtering, by adding a small amount of cochineal, powdered and dissolved in a little brandy (white) and strained through fine muslin.

Fill a large china or glass jar three quarters full of rose leaves and pour over them enough brandy to Rose brandy. cover them completely. The next day strain and mash them, pour brandy back into the jar, and add more rose leaves. This should be repeated daily while the roses last. The jar must be very well covered. This is generally used for flavoring but, diluted with melted ice, it makes a pleasant summer drink. A few rose leaves may be sprinkled on the top of the wine after it has been poured into the glass ready to serve.

Gather grapes just before they begin to be purple, pick enough from the stems to fill a large preserving Grapeshrub. kettle three quarters full, and pour on as much boiling water as the kettle will hold. Boil over a brisk fire until all the grapes burst. Then press through a colander

and strain. Allow one pound of sugar to each quart of liquid ; stir until dissolved ; then put into a clean kettle, boil and skim for ten minutes longer, if there is still scum. When cold put in each bottle about a gill of pure brandy and pour the syrup upon it. Seal it and place in a dry closet.

For making currant shrub the currants must be quite ripe. Pick them from the stems and squeeze through a linen bag. Use a pound of loaf sugar to a quart of juice. Mix them, letting the sugar dissolve before putting it on the fire. Boil ten minutes, skimming it once. Add one half cup of best white brandy to each bottle, and fill, sealing the corks. It improves with age. For cherry shrub the cherries are put into a crock which is closely covered and set into boiling water. After boiling for fifteen minutes they are put into a bag and strained. Add sugar and proceed as with currant shrub.

Rose cordial is almost the same as rose brandy. A pound of rose leaves is placed in a china soup tureen and covered with lukewarm water. This process is repeated every day or every other day until the desired strength is reached. Now add one half pound of loaf sugar, one half pint of white brandy, an ounce of broken cinnamon to every pint of the infusion ; also an ounce of coriander seeds. Put into a well-covered glass jar and let it stand for two weeks. Pin fine muslin or white blotting paper over the bottom of a sieve and filter and bottle.

Squeeze the berries through a linen bag. To each quart of juice put a pint of best brandy (white) and one half pound of powdered loaf sugar. Pour it into a demijohn and let it stand for ten days. Filter as in rose cordial and bottle.

Strawberry or
raspberry cor-
dial.

For Turkish sherbet a forequarter or knuckle of veal must be thoroughly washed and broken. Boil with two quarts and a pint of water until the liquid is reduced to one quart. Skim well, strain, and set away to cool. When quite cold mix with it one and one half pints of clear lemon juice and the same of capillaire (page 266). Serve cold or iced. Sherbet may be made thus of all sorts of fruits.

Take three quarters of a pound of shelled sweet almonds and one quarter of a pound of shelled bitter almonds, blanch and pound in a mortar until perfectly smooth. A little orange-flower or rose water added occasionally will prevent them from oiling while in the mortar. Add slowly a pound of loaf sugar pulverized. When all is in a stiff paste, put into little pots and close tight; it will then keep well. It may be made liquid by stirring a piece as big as a walnut in a glass of water. This will probably need straining to make a clear liquid.

Cut up a large chicken (an old one will do) into small pieces and crack the bones. Put it in a stone jar—waterproof and having a cover water-tight. Set the jar into the preserving boiler, in which is water, and boil for three hours; then strain off the liquid and season it slightly with salt, pepper, and mace or sugar or lemon juice according to taste. The remainder of the chicken after the fluid has been poured off will yield nearly as much jelly as the first time.

Make a half ounce of arrowroot into a thin paste with milk. When perfectly smooth fill the cup with milk, cover it and let it stand for fifteen minutes. Cut a lemon peel into a pint of water and boil until reduced one half. Remove the peel and while the water boils add the arrowroot and sugar according to taste.

Turkish
sherbet.

Orgeat.

Chicken jelly.

Arrowroot
jelly.

Let it boil five minutes longer. Wine and nutmeg make good flavoring for this jelly.

Wash and thoroughly pick a quarter of a pound of rice ;
 Rice jelly. mix it with half a pound of loaf sugar ; add just enough water to cover it. Boil until it becomes glutinous ; then strain and season to taste and set aside to cool.

Boil two calves' feet in two quarts of water until the
 Calves' foot liquor is reduced one half and the meat drops
 jelly. off. Strain into a deep dish and put away to cool. The fat can then be removed easily. A beaten yolk may be added and a flavoring of nutmeg and other spices.

The necessary ingredients of wine jelly are one third of
 Wine jelly. a box of gelatin, two ounces of sherry, a table-spoonful of sugar, one ounce of water, two ounces of boiling water. The gelatin must soak in the cold water about twenty minutes. Add sugar and hot water and stir until dissolved ; then pour in the wine, strain, and mold, and set aside to harden. Other wine jellies are made of fruits of all sorts and berries, grapes, etc., which may be added with the wine.

The research of many prominent physicians of late years
 Cereals. regarding the use of the variety of grains has resulted in the establishment of manufactures termed "Health Food Companies." These discoveries, based upon scientific investigations, have shown to the world that while the brute creation, since time began, has lived and thrived upon the various cereals—to them a veritable "staff of life"—for man these foods, although quite as necessary to his health, lost their strength in excessive refinement. Dainty women and fastidious men would fondly deceive themselves as they ate the slices of superbly white bread, that the staff of life was indeed palatable

and wholesome, whereas in reality they relied upon a mere skeleton for their sustenance. In these days of common sense the brown bread of the peasant is not despised. In time past the flour for bread contained almost nothing conducive to the growth of muscle or brain. Later the nutrient portions of grains came into vogue; and now the "ear and the full grain in the ear" are alike utilized and that in an almost innumerable variety of ways. The hull and the gluten were both removed in the old style of milling and the remaining portion contained little besides starch, which would not go very far toward the sustenance of life. In many cereals now the hull is also retained, investigation showing that this element proved a healthy irritant aiding the flow of the secretions, and thus aiding digestion.

Among the varieties of cereals are whole wheat, cracked wheat, rolled wheat, pearled wheat, granulated wheat—coarse and fine, wheat gluten; pearled oats, rolled oats, oatmeal—coarse and fine; granulated barley, pearled barley, barley flour, etc.; graham flour—fine and coarse.

Varities of cereals.

Any of the above cereals may be used for porridges and gruels thick and thin—from the substantial mush to the palatable gruel and to the various "meal waters." When making porridge the cereals containing the hull and gluten should be soaked over night and in the morning left to simmer slowly without much stirring (the proper way is to make porridge in a farina boiler). When entirely tender the flavoring should be added; in choosing this the nurse must use her own judgment. In making gruels always make the food into a smooth paste with boiling water, add a pint or less of water according to the quantity of meal used and

To make gruel and porridge.

of gruel needed, and let it boil down to one third its original amount. Some meals must be strained ; they should never be lumpy or uneven. For meal waters the gruel is made thinner according to the state of the patient for whom it is intended. Again the choice of the flavoring is left to the nurse.

The broths are as follows : mutton broth, beef broth,
 Broths. chicken broth, calves' foot broth, oyster broth,
 clam broth, beef tea, beef juice, beef extract.

With the broths as with the gruels the varieties of flavoring need not be specified ; they will be simply suggested and the nurse's good taste and the patient's preferences are the main points to be consulted. Broths vary in consistency from the thinnest of broths for the weakest of stomachs to the jellied stock for the famished convalescent.

If mutton broth is needed constantly a stock should be
 Mutton made. Put a shank or shin bone, chopped, into
 broth. the preserve boiler in a gallon of water and boil
 six hours, adding more water when necessary. As much fat as possible should be removed before putting upon the fire. Boil until the bones have but little meat upon them. Remove all the bones and large pieces of meat, strain into a crock, and when cool take off the remaining fat. The bones and meat may be boiled again with a quart or so of water and the strained gravy added to the other. Season and use when needed. Mutton broth may be made quickly by chopping up a pound or two of lean mutton put in a saucepan with seasoning, cover and boil quickly, and in twenty minutes remove, strain, and serve with crackers. To mutton broths may be added a small amount of any of the cereals, and well-cooked rice and barley, parsley, celery seeds, etc. For very ill patients and for fever cases they must be strained ; for convalescents they may be

left in the broth. Jellies are good served with this broth.

Put one pound of meat in a quart jar and fill with cold water. Add ten drops of muriatic acid. Place Beef tea. on ice over night. The next day set the jar into a saucepan one half full of water. Place a doubled piece of cloth at the bottom to keep the jar from breaking. Keep over the fire for thirty minutes, the temperature of the water not exceeding 105°. At 112° a part of the albuminous nourishment would be destroyed.

Extract of beef is made by chopping raw beef fine and pressing through a lemon squeezer or a meat Extract of beef. press. If neither of these is handy the meat may be pressed firmly between two plates, something after the manner of the ancient meal press. Two pounds will be the amount generally required.

Chicken broth may be made as mutton broth, with or without stock; so also the calves' foot broth—Chicken broth. which may be made from the jelly.

For beef broths and tea, pepper, red and black, pickles, celery seeds, cereals, and eggs beaten up, are the chief garnishing used; for chicken broth the seeds, pickles, and cereals, soaked crackers, tapioca, or sage, may be used; for calves' foot broth, mushrooms, parsley, or stale bread toasted and cut in dice.

Strain the water from oysters and to it add a very small lump of butter, pepper, and salt. Put all in a Oyster broth. tin cup and heat well but not to the boiling point. Heat a pint—more or less, according to amount required—of milk to the boiling point. Now add oyster juice to the boiled milk and let it boil again. If it is not strong enough, about one half dozen oysters may be added at the same time with the oyster water. Serve with crackers.

Meats vary greatly in points of digestibility and nutriment both in their natural state and to a greater or lesser degree through the various ways of preparation for eating. A few suggestions are here given regarding the cooking and the choosing of meats, especially for people not in the normal condition of health. It is a point of preference and not of necessity that the choice of meats for the invalid is suggested here. Necessity does not exist in this case and were it not that the world holds so many lovers of meat, trial would soon bring conviction that the grain and vegetable portions of foods would more than suffice for rapid and sure convalescence, not to mention the continuance of health to large numbers of human beings; for in the case of many of sedentary habits, meats badly cooked and hurriedly eaten, are fruitful causes of disease.

First, then, the nurse should constantly bear in mind that unless the patient craves meat,* she should strike it from the bill of fare whenever something else would do as well. If the muscles need toning up a nitrogenous food is called for. Beef contains much fibrin and albumen; wheat contains as much gluten and albumen, and the variety of palatable dishes made from wheat greatly exceeds those made from beef. Thus it is true of all the meats, that their equivalents may be found in the vegetables and cereals.

Avoid beef that has the odor of carbohic acid. Chicago dealers often use it to preserve the beef, but it is injurious. Avoid also blackened edges or discolored blotches throughout the meat. A good piece of beef, from whatever portion, will be of a bright red with solidly packed fibers and with no tendons connecting them.

Meat not
necessary to
life.

How to choose
beef.

* NOTE.—The above does not refer to broths, but only to solid meats.

In tender beef the fibers are easily severed by pinching with the finger nail. If the tissue resists and requires pulling to sever it, the beef is tough and should not be used for steak or roast but might answer for beef tea and broth. Even for that it should be pounded well before using.

The lean parts of the cheek, neck, and chine may be used for broth and tea. Parts of the loin and rump furnish the steaks; the tenderloin is the part nearest the bone, and the sirloin is the portion outside the tenderloin. Other portions of the loin and rump give porterhouse steak and tender roasts. The shoulder and ribs are nice stews and fairly good roasts. The flank and round give good roasts and fairly good steak when the beef is young. The foot is used in young beeves for the renowned calves' foot jelly. The leg and shin are generally used for broth and soup stock.

Mutton is more nutritious and digestible than beef, although some hold that the broth made from beef is more nutritive than that from mutton. Mutton and lamb.

Lamb when tender and young may be used sparingly, but must be well cooked.

Veal and pork should be excluded from the invalid's bill of fare, but veal, pork, ham, or bacon may be Veal and pork. chewed if not swallowed; or they may be cooked with other foods, as with an omelet. In this way the patient obtains the flavor of the meat without the injurious effects.

Olive oil is preferable to lard to use in cooking meats; mutton suet rendered is also good.

Venison, birds, etc., are good for invalids if the game is young and tender, hung the required period, Game. and properly cooked. Turkey and chicken should be given carefully; the breast is the portion best for invalids. A fowl is not tender unless the skin is yellow.

The pores from which the feathers are plucked should be visible and the breastbone should be pliable.

Fish should be carefully used because in most places it is hard to obtain them fresh. They are not fresh unless the eyes are well formed and not sunken into the head ; the gills should be soft and yielding. A stale fish is not only unwholesome, but is really harmful.

Oysters, clams, etc., are good for broths and flavoring but in other ways they should not be used for invalids. For invalids all fries and rich sauces should be avoided.

During her period of training in the kitchen, the nurse will be taught cooking in all its branches, the chief nurse choosing from the many excellent cookbooks in vogue, the one from which the nurses are to learn. Trained nurses should not stand in need of suggestions regarding the serving of foods, but the subject is one of much importance as

the manner of serving greatly affects the comfort and appetite of the patient. Neatness about the utensils for eating and daintiness with the napkins and trays and the artistic arrangement of the articles of food are very quickly noticed by the patient, and attentions delicate and well timed are appreciated even by those who are very ill. To the patients who are prone to be irritable, the smallest oversight or the tiniest accident regarding the preparing of the food or the arrangement of the tray would seem a mountain of offense.

It is evident then that there should be a standard of excellence and if the nurse should fall below this she should understand that she deserves not only the displeasure of her patient but the reprimand of her chief as well. This standard of excellence demands two things : absolute cleanliness and faultless cooking, both of

which are within the ken of every right-minded and earnest nurse. However light the food may be and however ill and indifferent the patient, everything should be neat and clean, and as daintily arranged and as carefully administered as for the most fastidious patient.

When it is evident to the nurse that her patient will recover, she should supply herself with one half dozen napkins, one half dozen doilies, one half dozen trays of different sizes from one the size of a saucer to one large enough to use in serving a dinner. She should furthermore obtain one half dozen spoons, three forks, one knife—small and light, made of a substance called white metal ; one half dozen glasses of different sizes, two of them with handles and having the shape of cups ; six saucers of various sizes from the sauce dish to the coffee saucer, and three plates varying in size ; a little bouquet holder, a teapot, sugar bowl, cream jug, a soup bowl, or a bread and milk set, and a pepper and a salt shaker. A few years ago the list above described would have seemed extravagant, but every one who has been inside or even seen the many five and ten cent stores, can readily see that it need not require a fortune to buy all that would be needed for the invalid for ornament as well as for use.

Utensils
needed.

If the patient is on liquid diet the broth or milk should not in her presence be poured from a huge pitcher into a doubtful looking utensil. Care should be taken not to spill the food, for if this should happen once the patient might raise his head from the pillow to avoid a repetition of it, and thus cause a pain in the back of the neck or a nervous headache. Such an experience would doubtless cause a distaste for further nourishment.

Liquid diet.

We hope and believe that such scenes as that depicted

above are rare in the profession now ; yet that as well as other practices (the extermination of which is the mission of these pages) might occur through ignorance of the needs of sick people as well as a painful lack of home culture—all of which would, at the termination of the training, find no place in the daily work of the very nurse who failed most in those things at the beginning of her training.

A glass of milk should be placed on a small tray (a plate will answer) a small napkin or doily placed upon the tray
 Serving a if possible and if the patient is dizzy, or if the
 glass of milk. order is that he is not to be raised from the
 pillow, a nicely shaped china feeder should be placed beside the milk ; in this case it is best to have the milk in a small pitcher. Only a small amount should be poured into the feeder and a little given at a time to the patient. If the bed is low the nurse should kneel beside it ; she should never sit on the edge of the bed or lean against the side. If the patient appears embarrassed the nurse should brightly and softly explain what the feeder is, and that, because the doctor does not wish him to raise his head, the feeder is just the thing and he will soon get used to it. In case of a prolonged antipathy to the use of a feeder on the part of the patient, the nurse may procure a few small thin tumblers and let him take his food from them, never filling them more than one half. In this manner the patient may drink without raising his head. When he is inclined to raise his head from the pillow when taking his food, the nurse should at once show him that it is altogether unnecessary if the glass or feeder is not too full.

In serving liquid diet there should be on the tray the
 Serving pepper and salt shakers, the pitcher of milk or
 broth. broth, a napkin and a spoon. Broth should be
 served at the bedside. When crackers are served they

should be laid evenly upon the saucer. Bread should not be buttered beforehand unless the patient requests it.

When the patient is beginning to eat solid foods, the tray should be made as attractive as possible. Serving solid foods. Flowers in a tiny bouquet holder or laid loosely upon the tray will aid in obtaining this effect. The dishes of meat, potatoes, etc., should be prettily garnished and, even if the patient is ravenously hungry, a large amount of food should not be placed upon the tray. It is better to have a small amount, making the patient feel as if he could eat three times as much, and if necessary have a second serving. The tray should not have too many dishes upon it; it would be better to divide the meal into two or three courses. Above all things the nurse must remember that the patient should never be asked concerning his bill of fare, but if he volunteers a preference, his wish should be carried out, provided only that the doctor gives his approval.

Milk as it is taken from the udder of the cow is aseptic but in its transportation from the barnyard to The infant's food. the pantry, from the pantry to its various destinations—by the time the city homes and hospitals receive it, it has become thoroughly septic and in that state is the cause of hundreds of deaths among the infants who are “brought up on the bottle.” Substitutes for cow’s milk are offered in the various “infant’s foods” prepared and packed in tins and used when mixed with milk and water. Many of them are good as far as they go, but all are insufficient for nourishment and do not altogether take the place of the aseptic mother’s milk.

Recently there has been discovered a means by which cow’s milk may again be made pure, and it is Sterilization of milk. now widely used. This method consists in sterilizing the milk, *i. e.*, destroying the germs in it. To

sterilize any fluid it is necessary to subject it to a high degree of heat under pressure. The process of sterilizing milk must be done with the aid of an apparatus designed for that purpose, and a description of it as it is generally used in hospitals will be given here. The apparatus is made of tin and consists of a case like a huge bread box with a tight fitting cover. A few inches above the base of the case is a movable tray which has a framework attached that will hold a number of graduated nursing bottles. On the outside there is a row of racks for holding the bottles while drying, and just below them a little drain for the dripping of the washed bottles. There is also on one side of the case a tin attached in which to heat the milk at "feeding time." Enough bottles are prepared at one time to last the twenty-four hours, the number depending upon the age of the infant and the order of the physician in charge. Each bottle has two corks, one of perforated rubber over which a glass top fits tightly. The case generally contains ten six-ounce graduated nursing bottles. The milk should be sterilized every morning as soon as the morning's milk arrives. First, six ounces of milk should be poured into each bottle and the bottles closed with the rubber corks, but not with the glass covers. The false bottom should now be removed and the bottles put in the frame; before this is replaced water should be poured into the case to about the depth of two inches; the frame should now be replaced and the lid firmly adjusted and the whole case put upon the fire. When the milk has boiled the glass stoppers should be pressed into the rubber corks. Just before boiling, the milk expands and so each bottle is hermetically sealed. Let it boil again for twenty minutes, and then remove the frame; pour out the water, replace the frame again, and carry to the ward

or nursery. At the times for feeding, the bottles may be heated in water poured in the bath attached to the side. The nipple should be thoroughly washed and laid in boiling water a few minutes previous to using. A rubber tube should never be used in the nursing bottle. If the milk is to be diluted it should be done with water previously boiled and filtered. After feeding the infant once, if any milk remains in the bottle it should be thrown away. Immediately after using, the bottles should be washed in a solution of bicarbonate of sodium and placed upon the rack to drain.

APPENDIX.

The nurse should familiarize herself thoroughly with the abbreviations in general use and the symbols used in writing prescriptions—also the Roman numerals and the tables of weights and measures. Although it is never necessary for her to write prescriptions, it is often necessary for her to read them and she should be able to calculate, if need be, just how many grains or drops of a medicine her patient is taking, especially if the prescription contains a poison, as aconite or digitalis, making it necessary for her to watch its effect and report to the doctor. This however is more necessary in hospitals than in private practice.

ABBREVIATIONS.

ĀĀ.....	<i>ana</i>	of each same quantity.
A. C.....	<i>ante cibum</i>	before meals.
A. H.....	<i>alternis houris</i>	every other hour.
Ad lib.....	<i>ad libitum</i>	at pleasure.
A. N.....	<i>alterna nocte</i>	every other night.
App.....	<i>apply</i>	apply.
Aq.....	<i>aqua</i>	water.
Aq. bull. .	<i>aqua bulliens</i>	boiling water.
Aq. comm.	<i>aqua communis</i>	common water.
Aq. dest..	<i>aqua destillata</i>	distilled water.
Aq. ferv..	<i>aqua fervens</i>	hot water.
Aq. font..	<i>aqua fontis</i>	spring water.
Aq. marin.	<i>aqua marina</i>	sea water.
Aq. pluv...	<i>aqua pluvialis</i>	rain water.
Aq. pur...	<i>aqua pura</i>	pure water.

Bis in d.	<i>bis in die</i>	twice daily.
Bol.	<i>bolus</i>	a large pill.
Bull.	<i>bulliat</i>	let it boil.
C.	<i>congius</i>	a gallon.
Cap	<i>capiat</i>	let him take.
C. M.	<i>cras mane</i>	to-morrow morning.
C. N.	<i>cras nocte</i>	to-morrow night.
Chart	<i>chartula</i>	a powder-paper.
Cochl.	<i>cochleare</i>	a spoon.
Cochl.	$\left\{ \begin{array}{l} \text{ampl.} \\ \text{mag.} \end{array} \right. \text{cochleare} \left\{ \begin{array}{l} \text{amplum} \\ \text{magnum} \end{array} \right.$	a tablespoon.
Cochl.med.	<i>cochleare medium</i>	a dessertspoon.
Cochl.	$\left\{ \begin{array}{l} \text{min.} \\ \text{par.} \end{array} \right. \text{cochleare} \left\{ \begin{array}{l} \text{minimum} \\ \text{parvum} \end{array} \right.$	a teaspoon.
Col.	<i>cola</i>	strain.
Coll.	<i>collyrum</i>	eye water.
Comp.	<i>compositus</i>	compound.
Conf	<i>confectio</i>	a confection.
Cort	<i>cortex</i>	bark.
Dos.	<i>dosis</i>	a dose.
De d. in d.	<i>de die in diem</i>	from day to day.
Dest	<i>destilla</i>	distil.
Det	<i>detur</i>	let it be given.
Dil.	<i>dilut</i>	dilute.
Dim.	<i>dimidius</i>	one half.
Div.	<i>divide</i>	divide.
F.	<i>fiat</i>	let it be made.
Fl.	<i>fluidus</i>	fluid.
Fort.	<i>fortior-ius</i>	stronger.
Fot.	<i>fotus</i>	a fomentation.
F. pil.	<i>fiat pilula</i>	make into a pill.
Gel. quavis.	<i>gelatina quavis</i>	in any kind of jelly.
Gr.	<i>granum</i>	a grain.
Gt.	<i>gutta</i>	a drop.
Gtt.	<i>guttæ</i>	drops.
Gum.	<i>gummi</i>	gum.
H. S.	<i>hora somni</i>	at bedtime.
Ind.	<i>in die</i>	daily.
Inf.	<i>infunde</i>	infuse.
Lb.	<i>libra</i>	a pound.

Liq.	.....	<i>liquor</i>	liquor.
M.	.....	<i>misce</i>	mix.
Man	.....	<i>manipulus</i>	a handful.
Mel	.....	<i>mel</i>	honey.
Mod. præ.	.....	<i>modo præscripto</i>	in manner prescribed.
Mod. oper.	.....	<i>modus operandi</i>	manner of operation.
Mor. sol.	.....	<i>more solito</i>	in the usual manner.
Muc	.....	<i>mucilago</i>	mucilage.
N. M.	.....	<i>nux moschata</i>	nutmeg.
O	.....	<i>octarius</i>	a pint.
Ol.	.....	<i>oleum</i>	oil.
Omn. bid.	.....	<i>omni biduo</i>	every two days.
Omn. bih	.....	<i>omni bihorio</i>	every two hours.
Omn. hor.	.....	<i>omni hora</i>	every hour.
Omn. man.	.....	<i>omni mane</i>	every morning.
Omn. nocte.	.....	<i>omni nocte</i>	every night.
Omn. quadr. hor.	.....	<i>omni quadrante horæ</i>	every quarter hour.
Ov.	.....	<i>ovum</i>	an egg.
P. æ.	.....	<i>partes æquales</i>	equal parts.
Pil.	.....	<i>pilula</i>	a pill.
P. C	.....	<i>post cibum</i>	after eating.
Pot.	.....	<i>potio</i>	a potion.
P. R. N.	.....	<i>pro re nata</i>	as occasion requires.
Pulv.	.....	<i>pulvis</i>	a powder.
Q. in die.	.....	<i>quarto in die</i>	four times daily.
Q. P.	.....	<i>quantum placeat</i>	as much as may please.
Q. S.	.....	<i>quantum sufficit</i>	as much as is sufficient
R	.....	<i>recipe</i>	take.
Rad.	.....	<i>radix</i>	a root.
Rep.	.....	<i>repetatur</i>	let it be repeated.
S.	.....	<i>signa</i>	label or give directions.
Sem.	.....	<i>semen</i>	seed.
Semi-H.	.....	<i>semihora</i>	half an hour.
Si. op. sit.	.....	<i>si opus sit</i>	if there be need.
Solv.	.....	<i>solve</i>	dissolve.
Spts.	.....	<i>spiritus</i>	spirits.
SS.	.....	<i>semis</i>	half.
St.	.....	<i>stet</i>	let it stand.
Stat	.....	<i>statim</i>	instantly.

Suc.....	succus.....	juice.
Syr.....	syrupus.....	syrup.
T. D.....	ter in die.....	three times daily.
Troch.....	trochisci.....	lozenges.
V. O. S. or Vit. ov. sol. }	vitello ovi solutus. dissolved in the yolk of an egg.	
Ung.....	unguentum.....	ointment.

WEIGHTS AND SYMBOLS.

Troy and apothecaries' weights are the only two necessary for the nurse to learn. The metric weights are altogether superfluous for her.

Apothecaries' Weight.

20 grains	= 1 scruple.	℥
3 scruples	= 1 drachm.	ʒ
8 drachms	= 1 ounce.	℥
12 ounces	= 1 pound.	lb

Apothecaries' Measures.

60 minims	= 1 fluid drachm.	f℥
8 fluid drachms	= 1 fluid ounce.	f℥
16 fluid ounces	= 1 pint.	o
8 pints	= 1 gallon.	c

1 minim is 1-60 part of a fluid drachm.

1 grain is 1-60 part of a drachm.

1 drop is about $\frac{1}{2}$ to 1 minim, according to kind of liquid, so, obviously, there are about 1 to 2 drops to one minim. The safest and surest way to measure minims is to use a minim glass; to measure drops, use the cork of the bottle, dropping the medicine over it.

Teaspoonful	= f℥j.
Dessertspoonful	= f℥ii.
Tablespoonful	= f℥iv or f℥ss.
Teacupful	= f℥iv or one gill.
Glassful	= about f℥viii or o $\frac{1}{2}$.

The Roman Numerals.

I. 1	VI. 6	XX. 20	LXX. 70
II. 2	VII. 7	XXX. 30	LXXX. 80
III. 3	VIII. 8	XL. 40	XC. 90
IV. 4	IX. 9	L. 50	C. 100
V. 5	X. 10	LX. 60	

The twenties, thirties, etc., are expressed by adding the first nine numerals to them ; as XXI., twenty-one, XXXII., thirty-two.

METHOD OF READING A PRESCRIPTION.

Supposing the doctor should hand to the nurse a prescription like the following :

R.

Hydrarg. chlor. mit . . . gr. i.

Bismuth subnit. ℥ i.

M. et in chart. No. XII. div.

Sig.: one A. H.

and she wishes to know how much calomel her patient is to take, she should go about finding out in this wise : There are to be twelve powders ; if one grain is divided into twelve parts, each part would contain one twelfth of a grain ; furthermore if the sixty grains of bismuth in the drachm are divided into twelve powders, there will be five grains of bismuth in each powder ; consequently the patient will have one twelfth of a grain of calomel and five grains of bismuth for each dose.

Here is another :

R.

Bismuth subnitrate

Lactopeptine āā ℥ i.

M. et in chart.

No. XII. div.

Sig.: one Q. P.

Here there are five grains lactopeptine and five grains bismuth in each powder. Next take a liquid prescription :

R.

Strych. Sulph. gr. ss.

Ac. Phosphor. dil. ℥ iii.

Tr. Ferri Chlor. ℥ ii.

Elix. Simpl— Ad. ℥ iv.

M. S. Teaspoonful in water after meals.

To learn what fraction of a grain of strychnia is in one dose of this medicine, the nurse will first find out how many doses there will be in the bottle. The bottle holds

four ounces, there are eight drachms in one ounce, and if there are four ounces in the bottle there will be four times eight or thirty-two drachms or doses in the bottle. There being one half grain of strychnia in the thirty-two doses, of course in one dose, there will be one thirty-second of one half grain or one sixty-fourth of a grain. To find how many minims of iron in each dose, she will calculate that as there are sixty minims in one drachm, in two drachms there will be 120 minims, these divided into thirty-two doses, will give about four minims, or eight drops, in one dose.

MEDICINES AND DOSES.

A great deal depends upon the manner in which a medicine is given. The nurse should have dainty little glasses and cups, from which to administer it. Medicines are bad enough to take in any shape and should be made to look as inviting and to taste as pleasant as possible. It is well to have a little lemonade, cracked ice, jelly, or fruit to take afterward. In fever cases or for very sick patients of any sort, it is better to give cracked ice or to have the mouth swabbed out immediately after taking the medicine. Always suspend an oil in some sort of syrup or mix it with hot milk and shake well in a bottle, then pour it out and have it taken quickly.

If the patient is taking stimulants of any sort (not otherwise) reserve one of the doses of wine or whiskey to give with the oil. Always give oils from a cup. If the patient finds it difficult to take pills, give them in jelly or moist wafers. The nurse should not mix medicines before giving unless they are so ordered ; for it is impossible for her to tell what chemical action may take place and, besides, most medicines when mixed make ugly looking doses. Tincture of iron dropped into whiskey will look like the blackest ink. Keep all medicines from the patient's sight and reach and remove at once the glasses from which they are given. No matter how familiar the medicine bottles are to the nurse, she should never pour out a dose without *first looking at the label* ; and although all medicines do not require shaking before they are administered, yet she should accus-

tom herself to the habit of shaking *all* medicine bottles ; for those that do require it are rendered useless and sometimes harmful if the "shake well" is omitted. In giving an effervescing draught she should not insist that the patient drink it while the greatest force of the effervescence is going on. A little forethought on this point will save the patient much discomfort, and the effect of the dose will be equally good.

It is unnecessary for the nurse to study all the medicines in the pharmacopœia ; all that she will be likely to meet with in hospital and private work will be given here.

A few definitions of terms much used in connection with medicines will be given first.

A saturated solution is a solution in which there is as much of a substance as can be dissolved in a given amount of any liquid. Lime water is generally used in a saturated solution.

Spirits are alcoholic solutions made of substances that are volatile ; as, spirits of mindererus, spirits of niter, etc.

Tinctures are alcoholic solutions made of substances that are non-volatile ; as, Tr. digitalis, Tr. nux vomica, etc.

Solutions that are made like tinctures, but stronger, are called fluid extracts.

An emulsion is a mixture of oil and water coalesced with gum.

A mixture is an insoluble substance suspended in some vehicle.

A compound is a mixture or solution of two or more ingredients.

An electuary is a substance like jam.

A decoction is a solution made by boiling vegetable substances. A decoction does not keep well and should be renewed about every three days.

An infusion is also made from a vegetable substance, but without boiling. It is made with either hot or cold water.

<i>Medicine.</i>	<i>Dose.</i>
Acacia (Gum Arabic).....	ad lib.
" Mucilago.....	"
" Syrupus.....	"

Acetum (Vinegar).....	<i>f</i> 3 1 to 4.
Acidum Aceticum (Acetic Acid).....	externally.
Acidum Aceticum Dil.....	<i>f</i> 3 1 or more.
Acidum Arseniosum (Arsenious Acid).....	gr. 1-40 to $\frac{1}{2}$.
Aconiti Radix Ext.....	gr. $\frac{1}{8}$ to $\frac{1}{4}$.
“ “ Fl. Ext.....	gtt. $\frac{1}{2}$ to 2.
“ “ Tinct.....	gtt. 1 to 5.
“ “ Ung.....	externally.
Aconitin.....	gr. 1-40 to 1-20.
Spts. Ætheris Nitrosi (Sweet Spts. of Niter) <i>f</i> 3 $\frac{1}{8}$ to 2.	
Spiritus Ætheris Comp. (Hoffman's Anodyne) <i>f</i> 3 $\frac{1}{8}$ to 1.	
Alcohol (Spts. Rectificatus)....	at discretion, externally.
Aloe (Aloes) Ext.....	gr. 2 to 8.
“ Fl. Ext.....	<i>f</i> 3 $\frac{1}{8}$ to $\frac{1}{2}$.
“ Tinct.....	<i>f</i> 3 2 to 8.
“ Vinum.....	<i>f</i> 3 1 to 3.
Aloin.....	gr. $\frac{1}{2}$ to 2.
Alumen (Alum).....	gr. 8 to 30.
Ammoniæ Aqua.....	gtt. 5 to 30.
“ Fortior.....	externally.
“ Spiritus.....	gtt. 10 to 15 dil.
“ Spts. Aromat.....	<i>f</i> 3 $\frac{1}{2}$ to 1.
Ammonii Acetatis Liq. (Spts. of Mindererus) <i>f</i> 3 $\frac{1}{2}$ to 4.	
“ Carbonas.....	gr. 3 to 10.
“ Chloridum.....	gr. 3 to 20.
“ Citratis Liq.....	<i>f</i> 3 2 to 6.
Amyl Acetate.....	inhaled, gtt. 1 to 5.
“ Iodide.....	“ gr. 6 to 30.
“ Nitrite.....	“ gtt. 1 to 5.
Anisum (Anise) Aqua.....	<i>f</i> 3 1 to 4.
“ Oleum.....	gtt. 2 to 8.
“ Spiritus.....	gtt. 20 to 60.
Antimonium (Antimony)	
“ Chloridum.....	gr. $\frac{1}{8}$ to $\frac{1}{2}$.
“ Emplastrum.....	externally.
“ et Potass. Tart. (Tartar Emetic) gr. $\frac{1}{8}$ to 3.	
“ Iodidum.....	gr. $\frac{1}{4}$ to 1.
“ Pilula Comp. (James' Powder) 1 to 3 pills.	
“ Ung.....	externally.

Antimonii Vinum	gtt. 10 to $f\text{ }3\text{ }1$.
Apium Grav. (Celery Seeds).....	ad lib.
Apomorphia.....	hypodermically, gr. 1-30 to $\frac{1}{4}$.
Argenti (Silver) Chloridum	gr. 1 to 3.
“ Cyanidum	gr. 1-20 to $\frac{1}{8}$.
“ Iodidum	gr. $\frac{1}{4}$ to 1.
“ Nitras	gr. $\frac{1}{8}$ to $\frac{1}{4}$.
“ “ Fusa (Lunar Caustic) externally.	
Arniceæ Extractum.....	gr. 2 to 5.
“ Fl. Ext.....	gtt. 10 to 30.
“ Emplastrum.....	externally.
“ Tinctura.....	externally to bruises.
Arsenici (Arsenic) Bromidum.....	gr. 1-60 to 1-15.
“ Chloridum.....	gr. 1-60 to 1-15.
“ et Hydrargyri Iodidi Liq. (Donovan's Sol.)	gtt. 3 to 15.
Assafoetida	gr. 5 to 30.
Assafoetidæ Mistura.....	$f\text{ }3\text{ }\frac{1}{2}$ to 1.
“ Pilula.....	gr. 3 in pill.
“ Suppositorium.....	in rectum.
“ Tinct	$f\text{ }3\text{ }\frac{1}{4}$ to 1.
Atropiæ (Atropin) Sulphas (Sulphate	
of Atropia).....	cautiously, gr. 1-90.
“ Sulphatis Sol.....	gtt. 1 to 2.
“ Ung.....	externally.
Aurantii Corticis (Orange Peel) Conf.....	ad lib.
“ “ Syr.....	vehicle for medicine.
Avenæ Farina (Oatmeal).....	ad lib.
Avenæ Sativa (Oatmeal)....	gtt. 10 to 15
Belladonna.....	gr. $\frac{1}{2}$ to 2.
Belladonæ Radicis Fl. Ext.	gtt. 1 to 4.
“ Tinct.....	gtt. 5 to 10.
Benzoinum (Benzoin).....	gr. 10 to 20.
Benzoini Fl. Ext.....	gtt. 15 to 40.
“ Tinct.....	$f\text{ }3\text{ }\frac{1}{4}$ to 1.
Benzoicum Acidum.....	gr. 3 to 8.
Bismuthi (Bismuth) Subnitras.....	gr. 5 to 20.
Bromidia.....	$f\text{ }3\text{ }\frac{1}{2}$ to 1.
Buchu.....	gr. 8 to 30.
“ Fl. Ext... ..	$f\text{ }3\text{ }\frac{1}{4}$ to 1.

Buchu Ext.....	gr. 5 to 15.
“ Infus.....	$f\text{ }3\frac{1}{2}$ to 1.
“ Tinct.....	$f\text{ }3$ 1 to 4.
Caffea (Coffee).....	ad lib.
Caffein.....	gr. 1 to 3.
Calcis Liquor (Lime Water).....	$f\text{ }3\frac{1}{2}$ to 2.
Calcii Chloridum	gr. 2 to 20.
“ Chloridi Liq.....	$f\text{ }3\frac{1}{4}$ to 2.
“ Sulphuretum.....	gr. $\frac{1}{8}$ to 5.
“ Sulphas (Plaster of Paris).	
Camphora (Camphor).....	gr. 2 to 10.
Camphoræ Aqua.....	$f\text{ }3\frac{1}{2}$ to 4.
“ Linimentum.....	externally.
“ “ Comp.....	externally.
“ Monobromata.....	gr. 3 to 15.
“ Spiritus.....	gr. 10 to 40.
Camphorated Oil.....	externally.
Cannabis Indica (Indian Hemp).....	gr. 2 to 4.
“ Indicæ Ext.....	gr. $\frac{1}{2}$ to 2.
“ “ Fl. Ext.....	gtt. 5 to 10.
Cantharis (Spanish Fly).....	externally.
“ in Collodio (Blistering Collodion)	“
Cantharidis Emplastrum	“
“ Ung.....	“
“ Tinct.	gtt. 4 to 15.
Cantharidin.....	gr. 1-180 to 1-40.
Capsicum (Cayenne Pepper).....	gr. $\frac{1}{4}$ to $\frac{1}{2}$.
Capsici Oleoresina	gtt. $\frac{1}{4}$ to 1.
“ Tinct.....	gtt. 10 to $f\text{ }3$ 1.
Carbo (Animal Charcoal).....	gr. 5 to 20.
“ Ligni.....	gr. 10 to 40.
Carbolicum Acidum	gr. $\frac{1}{2}$ to 3 in pill.
Carbolici Acidi Glycerina.....	gtt. 5 to 20.
“ “ Sol.....	dressings.
Carbonici Aqua (Soda Water).....	ad lib.
Cardamomum (Cardamom).....	gr. 5 to 9.
Cardamomi Fl. Ext.....	gtt 10 to 80.
“ Tinct.	$f\text{ }3$ 1 to 2.
“ Tinct. Comp.	$f\text{ }3$ 1 to 2.

Carum (Caraway).....	$\mathfrak{z}\frac{1}{4}$ to 2.
Cari Oleum.	gtt. 1 to 5.
Caryophyllus (Cloves).....	gr. 3 to 12.
Caryophylli Oleum.....	gtt. 1 to 10.
Cascarilla.....	gr. 10 to 30.
Cascarillæ Tinct.....	$f\mathfrak{z}\frac{1}{2}$ to 2.
Cataria (Catnip).....	\mathfrak{z} 1 to 2.
Catarisæ Fl. Ext.....	$f\mathfrak{z}$ 1 to 2.
Catechu	gr. 10 to 30.
“ Fl. Ext.....	gtt. 10 to 15.
“ Tinct	$f\mathfrak{z}\frac{1}{4}$ to 1.
Chloral Hydrate.....	gr. 10 to 15.
“ Croton	gr. 5 to 10.
Chlorinii Aqua.....	$f\mathfrak{z}$ 1 to 4.
Chlorodyne.....	gr. 5 to 30.
Chloroformum Purificatum.....	gtt. 6 to 30.
“ Venale (Impure).....	sprains.
Chloroformi Mistura.....	$f\mathfrak{z}$ 2 to 8.
“ Spiritus.....	gtt. 10 to $f\mathfrak{z}$ 1.
“ Tinct. Comp.....	gtt. 10 to $f\mathfrak{z}$ 1.
Chondrus (Irish Moss).....	demulcent.
Chromicum Acidum.....	externally.
Cimicifuga (Black Snakeroot).....	$f\mathfrak{z}\frac{1}{4}$ to 1.
Cimicifugæ Fl. Ext	$f\mathfrak{z}\frac{1}{4}$ to $\frac{1}{2}$.
“ Tinct.....	$f\mathfrak{z}\frac{1}{2}$ to 2.
Cinchona (Peruvian Bark).....	gr. 10 to 60.
Cinchonæ Ext.....	gr. 5 to 30.
“ Fl. Ext.....	$f\mathfrak{z}\frac{1}{4}$ to 1.
“ “ Comp.....	$f\mathfrak{z}\frac{1}{2}$ to 1.
“ Tinct.....	$f\mathfrak{z}$ 1 to 3.
“ “ Comp. (Huxham’s Tinct.)..	$f\mathfrak{z}$ 1 to 2.
Cinchonia.....	gr. 3 to 30.
Cinchonidia.....	gr. 3 to 30.
Cinnamomum (Cinnamon)	gr. 10 to 20.
Cinnamomi Aqua.....	$f\mathfrak{z}$ 1 to 2.
Citricum Acidum.....	gtt. 10 to 30.
Colehiei Radicis Fl. Ext.....	gtt. 2 to 8.
“ “ Vinum.	gtt. 15 to 60.
“ Seminis Fl. Ext.....	gtt. 5 to 20.

Colchici Seminis Vinum.....	<i>f</i> 3 $\frac{1}{4}$ to 1.
“ “ Tinct	<i>f</i> 3 $\frac{1}{8}$ to 1.
Collodium (Collodion).....	externally.
Colocynthin	gr. $\frac{1}{4}$ to 1.
Colocynthis (Colocynth).....	gr. 2 to 8.
Conii (Hemlock) Folia	gr. 2 to 8.
“ Fl. Ext.	gtt. 3 to 30.
“ Ext.....	gr. 1 to 8.
“ “ Alcoholic.....	gr. $\frac{1}{2}$ to 2.
“ Succus	<i>f</i> 3 $\frac{1}{2}$ to 4.
“ Tinct	<i>f</i> 3 $\frac{1}{2}$ to 1.
Copaiba.....	<i>f</i> 3 $\frac{1}{8}$ to 1.
Copaibæ Oleum	gtt. 8 to 15.
“ Pilula.....	gr. 2 to 5.
Creasotum (Creosote)	gtt. 1 to 3.
Creasoti Aqua.....	<i>f</i> 3 1 to 4.
“ Mistura	<i>f</i> 3 4 to 8.
Creta (Chalk).....	gr. 8 to 20.
“ Præparata.....	gr. 10 to 40.
Cretæ Mistura.....	<i>f</i> 3 4 to 8.
Cupri (Copper) Sulphas.....	gr. $\frac{1}{4}$
“ Subacetas (Verdigris).....	gr. $\frac{1}{8}$ to $\frac{1}{4}$.
Digitalis (Foxglove).....	gr. $\frac{1}{2}$ to 2.
“ Ext....	gr. $\frac{1}{8}$ to 1.
“ Fl. Ext.....	gtt. 2 to 8.
“ Tinct.....	gtt. 10 to 50.
“ Infus.....	<i>f</i> 3 2 to 4.
Digitalinum	gr. 1-60 to 1-30.
Elaterium	gr. $\frac{1}{8}$ to $\frac{1}{4}$.
Elaterii Ext	gr. $\frac{1}{8}$ to $\frac{1}{4}$.
Elaterinum (Elaterin).....	gr. 1-32 to 1-16.
Elixirs.....	for most elixirs, <i>f</i> 3 $\frac{1}{2}$ to 2.
Emetia (Active Principle of Ipecac).....	gr. 1-16 to $\frac{1}{2}$.
Ergota (Ergot)	gr. 5 to 30.
Ergotæ Ext.....	gr. 3 to 10.
“ Fl. Ext.....	gtt. 10 to <i>f</i> 3 1.
“ Tinct	<i>f</i> 3 1 to 3.
“ Vinum.....	<i>f</i> 3 1 to 3.
Ergotina.....	gr. 3 to 10.

Erigeron (Fleabane)	gtt. 10 to 30.
Eucalyptus (Blue Gum Tree)	gr. 10 to 40.
Eucalypti Globuli Oleum	gtt. 5 to 10.
Eucalyptol	gtt. 5 to 10.
Eupatorium { Boneset Thoroughwort	gr. 10 to 30.
Farina (Wheat Flour)	ad lib.
Ferrum (Iron) Dialysatum (Dialyzed)	gtt. 10 to 40.
Ferri Chloridum	gr. 1 to 3.
“ “ Tinct.	gtt. 10 to 60.
“ “ Liq.	gtt. 2 to 10.
“ Iodidum	gr. 1 to 8.
“ “ Pilula	1 to 2 pil.
“ “ Syrup	gtt. 15 to 40.
“ Subsulphatis Liquor (Monsel's Solution)	externally, gr. 1 to 3.
“ Basham's Mixture (Mistura Ferri et Ammonia Acetatis)	f℥ 1 to 2.
Ficus (Figs)	ad lib.
Filix Mas. (Male Fern)	℥ 1 to 3.
Filicis Ext.	gr. 10 to 20.
“ Fl. Ext.	f℥ 2 to 4.
“ Oleoresina	gtt. 15 to 30.
Foeniculum	gr. 10 to 40.
Foeniculi Aqua	f℥ 2 to 8.
“ Oleum	gtt. 5 to 15.
Galla (Nutmeg)	gr. 10 to 20.
Gallæ Ext.	gr. 2 to 5.
“ Fl. Ext.	gtt. 20 to 40.
“ Tinct.	f℥ 1 to 3.
Gallicum Acidum	gr. 5 to 20.
Gallici Acidi Glyceritum	gtt. 15 to 60.
Gaultheria (Wintergreen)	℥ ½ to 1.
Gaultheriæ Oleum	gtt. 3 to 6.
Gelsemium (Yellow Jasmine)	gr. 1 to 8.
Gelsemii Tinct.	gr. 10 to 60.
Gentiana (Gentian)	gr. 10 to 40.
Gentianæ Ext.	gr. 5 to 20.
“ Fl. Ext.	f℥ ¼ to 1.
“ “ “ Comp.	f℥ ¼ to 1.

Gentianæ Inf. Comp	<i>f</i> 3 $\frac{1}{2}$ to 1.
“ Mist	<i>f</i> 3 $\frac{1}{2}$ to 1.
“ Tinct	<i>f</i> 3 1 to 2.
“ “ Comp	<i>f</i> 3 1 to 2.
Glycerina (Glycerine).....	ad lib.
Glycyrrhiza (Licorice)	ad lib.
Glycyrrhizæ Ext	gtt. 15 to 60.
“ Fl. Ext.....	<i>f</i> 3 1 to 2.
“ Elix. Aromat	<i>f</i> 3 1 to 2.
“ Mist. Comp. (Brown Mixture).....	<i>f</i> 3 2 to 4.
Guaiaci Lignum (Guaiac Wood)	gr. 10 to 40.
“ Mist.....	<i>f</i> 3 $\frac{1}{2}$ to 1.
“ Tinct.....	<i>f</i> 3 $\frac{1}{2}$ to 2.
“ “ Ammon	<i>f</i> 3 $\frac{1}{2}$ to 2.
“ Resina	gtt. 5 to 20.
Hamamelis (Witch-hazel).....	gr. 15 to 30.
“	externally.
“ Fl. Ext.....	<i>f</i> 3 $\frac{1}{4}$ to 2.
Hedeoma (Penny Royal).....	3 $\frac{1}{2}$ to 1.
Hedeomæ Fl. Ext.....	<i>f</i> 3 $\frac{1}{2}$ to 1.
“ Oleum.....	gtt. 2 to 10.
Hordeum (Barley).....	ad lib.
Humulus (Hops).....	3 $\frac{1}{4}$ to 1.
Humuli Ext.....	gr. 10 to 30.
“ Fl. Ext.....	<i>f</i> 3 $\frac{1}{2}$ to 1 $\frac{1}{2}$.
“ Infus	<i>f</i> 3 1 to 2.
“ Tinct	<i>f</i> 3 $\frac{1}{2}$ to 2.
Hydrargyrum (Mercury) { Chloride Corros. Corrosive Sublimate.	gr. 1-32 to $\frac{1}{8}$.
Hydrargyri Chlorid. Mite (Calomel)	gr. 1-6 to 10.
“ Protoiodide (Green Iodide).....	gr. 1-10 to $\frac{1}{2}$.
Hydrastis (Golden Seal).....	3 $\frac{1}{4}$ to 3.
“ Ext.....	gr. 2 to 5.
“ Fl. Ext.....	<i>f</i> 3 $\frac{1}{4}$ to 4.
“ Tinct.....	<i>f</i> 3 $\frac{1}{2}$ to 4.
Hydrastin	gr. 1 to 6.
Hydriodicum Acidum Dil.	<i>f</i> 3 $\frac{1}{4}$ to 1.
Hydrocyanicum Acidum Dil. (Prussic Acid)	gtt. 1 to 5.
Hydrochloricum Acidum Dil. (Muriatic)	gtt. 5 to 20.
Hyoscyami Folia (Henbane).....	gr. 2 to 10.

Hyoseyami Semen.....	gr. 1 to 6.
“ Ext.....	gr. 1 to 3.
“ Ext. Alcoholic.....	gr. $\frac{1}{4}$ to 1.
“ Fl. Ext.....	gtt. 5 to 20.
“ Tinct.....	$f\text{ } \overline{3}$ $\frac{1}{4}$ to 1.
Hyoseyamia.....	gr. 1-90 to 1-120.
Hyoseyamin.....	gr. 1-120.
Iodinium (Iodine).....	externally.
Iodinii Liquor Comp.....	gtt. 6 to 15.
“ Tinct.....	gtt. 2 to 5.
“ Tinct. Comp.....	gtt. 4 to 15.
Iodoformum (Iodoform).....	externally, gr. 1 to 3.
Iris (Orris Root).....	dentifrice.
Jaborandi Ext.....	$\overline{3}$ $\frac{1}{4}$ to 1.
“ Fl. Ext.....	$f\text{ } \overline{3}$ $\frac{1}{4}$ to 1.
“ Tinct.....	$f\text{ } \overline{3}$ 1 to 2.
Jalapa (Jalap).....	gr. 8 to 30.
Jalapæ Ext.....	gr. 5 to 20.
“ Fl. Ext.....	$f\text{ } \overline{3}$ $\frac{1}{4}$ to 1.
“ Resina.....	gr. 1 to 8.
“ Tinct.....	$f\text{ } \overline{3}$ 1 to 2.
Jalapin.....	gr. 1 to 3.
Juniperus (Juniper).....	gr. 15 to 60.
Juniperi Tinct. Comp.....	$f\text{ } \overline{3}$ $\frac{1}{2}$ to 2.
“ Infus.....	$f\text{ } \overline{3}$ 1 to 3.
“ Oleum.....	gtt. 3 to 20.
Krameria.....	gr. 15 to 30.
Krameriaæ Ext.....	gr. 5 to 10.
“ Fl. Ext.....	$f\text{ } \overline{3}$ $\frac{1}{4}$ to $\frac{1}{2}$.
“ Infus.....	$f\text{ } \overline{3}$ 1 to 2.
“ Syr.....	$f\text{ } \overline{3}$ 1 to 4.
“ Tinct.....	$f\text{ } \overline{3}$ 1 to 2.
Lactopeptine.....	gr. 5 to 20.
Lactuca (Lettuce).....	gr. 5 to 30.
Lactucæ Ext.....	gr. 1 to 5.
“ Fl. Ext.....	$f\text{ } \overline{3}$ $\frac{1}{4}$ to 1.
“ Tinct.....	$f\text{ } \overline{3}$ 1 to 2.
Lacticum Acidum.....	$f\text{ } \overline{3}$ $\frac{1}{4}$ to 1.
Lavandula.....	gr. 10 to 30.

Lavandulæ Oleum.....	gtt. 2 to 10.
“ Spiritus.....	$f\text{ʒ} \frac{1}{2}$ to 2.
“ “ Comp.....	$f\text{ʒ} \frac{1}{2}$ to 2.
“ Tinct. Comp.....	$f\text{ʒ}$ 1 to 3.
Limon (Lemon).....	ad lib.
Limonis Oleum.....	gtt. 2 to 6.
“ Spts.....	$f\text{ʒ} \frac{1}{2}$ to 2.
“ Syr.....	$f\text{ʒ} \frac{1}{2}$ to 1.
Lithii Benzoas.....	gr. 5 to 10.
“ Bromidum.....	gr. 3 to 15
“ Carbonas.....	gr. 2 to 8.
“ Citras.....	gr. 2 to 8.
Lobelia.....	as expectorant, gr. 1 to 3.
“.....	as emetic, gr. 10 to 20.
Lobeliæ Acetum.....	$f\text{ʒ} \frac{1}{8}$ to $\frac{1}{2}$.
“ Tinct.....	gtt. 20 to 30.
“ Fl. Ext.....	gtt. 1 to 5.
Lycopodium (Powder).....	externally.
Macis (Mace).....	gr. 5 to 20.
Macidis Fl. Ext.....	gtt. 10 to 40
Magnesium (Calcined Magnesia).....	$\text{ʒ} \frac{1}{4}$ to 2.
Magnesii Carbonas.....	$\text{ʒ} \frac{1}{4}$ to 2.
“ “ Lev.....	$\text{ʒ} \frac{1}{4}$ to 1.
“ Carb. Liq.....	$f\text{ʒ} \frac{1}{2}$ to 2.
“ Citras.....	gr. 3 to 20.
“ Citratis Liq.....	$f\text{ʒ}$ 5 to 10.
“ Hypophosphis.....	gr. 3 to 15.
“ Sulphas (Epsom Salts).....	ʒ 1 to 4.
Manganesii Binoxidum.....	gr. 1 to 3.
Manna (Manna).....	ʒ 1 to $\text{ʒ} 2$.
Maranta (Arrowroot).....	ad lib.
Marrubium (Horehound).....	$\text{ʒ} \frac{1}{2}$ to 1.
Marrubii Decoctum.....	$f\text{ʒ} \frac{1}{2}$ to 2.
Mel (Honey).....	ad lib.
Melissa (Balm).....	$\text{ʒ} \frac{1}{4}$ to 1.
Melissæ Fl. Ext.....	$f\text{ʒ} \frac{1}{2}$ to 2.
Mentha Piperita (Peppermint).....	$\text{ʒ} \frac{1}{4}$ to 1.
Menthæ Piperitæ Aqua.....	$f\text{ʒ}$ 1 to 2.
“ “ Oleum.....	gtt. 1 to 10.

Menthæ Piperitæ Spiritus.....	gtt. 20 to 40.
Mentha Viridis (Spear-mint).....	$\mathfrak{z} \frac{1}{4}$ to 1.
Menthæ Viridis Aqua.....	$f\mathfrak{z}$ 1 to 2.
“ “ Oleum.....	gtt. 1 to 10.
“ “ Spiritus.....	gtt. 20 to 40.
Menthol.....	externally.
Morphiæ (Morphine) Acetas.....	gr. $\frac{1}{8}$ to $\frac{1}{3}$.
“ Murias.....	gr. $\frac{1}{8}$ to $\frac{1}{3}$.
“ Sulphas.....	gr. $\frac{1}{8}$ to $\frac{1}{3}$.
“ Sulphatis Liq.....	$f\mathfrak{z}$ $\frac{1}{2}$ to 2.
“ Suppos.....	each, gr. $\frac{1}{4}$ to $\frac{1}{2}$.
Moschus (Musk).....	gr. 5 to 10.
Muriaticum Acidum Dil. (Muriatic or Hydro- chloric Acid).....	gtt. 5 to 20.
Myristica (Nutmeg).....	gr. 5 to 15.
Myristicæ Oleum.....	gtt. 1 to 5.
“ Spiritus.....	$f\mathfrak{z}$ 1 to 2.
Myrrha (Myrrh).....	gr. 5 to 20.
Myrrhæ Tinct.....	$f\mathfrak{z}$ $\frac{1}{2}$ to 1.
“ Fl. Ext.....	gtt. 10 to 40.
Naphthalin.....	gr. 5 to 10.
Nitricum Acidum Dil. (Nitric Acid).....	gtt. 2 to 20.
Nitroglycerine (Tri-nitrin)....	pill, gr. 1-200 to 1-100 to 1-50.
Nitromuriaticum Acidum Dil. (Nitromuri- atic Acid).....	gtt. 2 to 20
Nitrous Oxide (Laughing Gas).....	inhaled.
Nux Vomica.....	gr. 1 to 3.
Nucis Vomiciæ Ext.....	gr. $\frac{1}{8}$ to 1.
“ “ Fl. Ext.....	gtt. 2 to 6.
“ “ Tinct.....	gtt. 5 to 20.
Oleum Bergamii (Bergamot Oil)	carminative, gt. $\frac{1}{2}$.
Oleum Morrhuæ (Cod-liver Oil).....	$f\mathfrak{z}$ 1 to 4.
“ “ et Calc. Phos.....	$f\mathfrak{z}$ 1 to 4.
“ “ Emulsion	$f\mathfrak{z}$ 1 to 4.
“ Olivæ (Olive Oil).....	ad lib.
“ Organi (Oil of Organum).....	gtt. 1 to 2.
“ Palmæ (Palm Oil) usually extern'y, $f\mathfrak{z}$	$\frac{1}{2}$ to $1\frac{1}{2}$.
“ Phosphoratum (Phosphorated Oil).....	gtt. 1 to 5.
“ Theobromæ (Cacao Butter)	

Oleum Tiglii (Croton Oil).....	gtt. $\frac{1}{4}$ to 2.
Opium.....	gr. $\frac{1}{4}$ to 2.
Opii Acetum.....	gtt. 3 to 10.
“ Confectio.....	gr. 8 to 40.
“ Ext.....	gr. $\frac{1}{8}$ to 1.
“ Ext. Aquos. (Aqueous Extract).....	gtt. 3 to 12.
“ Pilula.....	1 pill.
“ Pulv. Comp.....	gr. 2 to 10.
“ Suppositoria.....	gr. 1 to 2.
“ Tinct. (Laudanum).....	gtt. 6 to 25.
“ Tinct. Camphorata (Paregoric).....	$f\mathfrak{z}$ 1 to 2.
“ “ Deodorata.....	gtt. 8 to 25.
“ Vinum.....	gtt. 10 to 30.
Oxalicum Acidum (Oxalic Acid).....	gr. $\frac{1}{2}$ to 1 dil.
Pepo (Pumpkin Seeds).....	\mathfrak{z} 1 to 2.
Pepsinum (Pepsin) Saccharated.....	gr. 5 to 15.
“ Purum.....	gr. $\frac{1}{2}$ to 2.
Pepsini Vinum.....	$f\mathfrak{z}$ 1 to 2.
Petroselinum (Parsley).....	gr. 10 to 20.
Petroselini Oleum.....	gtt. 1 to 4.
Phosphorus.....	gr. 1-60 to 1-12.
Phosphori Pilula.....	gr. 1-100 to 1-50 to 1-25.
Phosphorated Oil.....	gtt. 1 to 5.
Phosphoricum Acidum Dil. (Phosph'ric Acid) gtt.	10 to 60.
Physostigma (Calabar Bean).....	gr. 1 to 3.
Physostigmatis Ext.....	gr. $\frac{1}{8}$ to $\frac{1}{4}$.
“ Fl. Ext.....	gtt. 1 to 3.
“ Tinct.....	gtt. 5 to 10.
Pilocarpin (Act. Prin. of Jaborandi).....	gr. 1-30 to $\frac{1}{3}$.
Pimenta (Allspice).....	gr. 10 to 40.
Pimentæ Oleum.....	gtt. 2 to 6.
Piper (Black Pepper).....	gr. 5 to 20.
Piperis Confect.....	\mathfrak{z} 1 to 2.
“ Fl. Ext.....	gtt. 10 to 40.
“ Oleoresina.....	gtt. 1 to 3.
Plumbi (Lead) Acetas (Sugar of Lead)....	gr. 1 to 3.
“ Carbonas (White Lead).....	externally.
“ Chloridum.....	externally.
“ Pil. cum Opio.....	1 to 3.

Plumbi et Opii Suppos.....	in rectum.
“ Nitras.....	gr. $\frac{1}{4}$ to $\frac{1}{2}$.
“ Subacet. Liq. (Goulard's Ext.)....	externally
Podophyllin.....	gr. $\frac{1}{4}$ to 1.
Podophyllum (Mandrake, May Apple)....	gr. 10 to 20.
Podophylli Ext.....	gr. 5 to 10.
“ Resina (Podophyllin).....	gr. $\frac{1}{4}$ to 1.
Potassii Acetas.....	gr. 5 to 30.
“ Arsen. Liq. (Fowler's Sol.).....	gtt. 2 to 8.
“ Bicarbonas.....	gr. 5 to 30.
“ Bitartras (Cream of Tartar).....	$\overline{3}$ 1 to 8.
“ Bromidum (Bromide of Potash)....	gr. 2 to 40.
“ “ Elixir.....	$f\overline{3}$ 1.
“ Carbonas.....	gr. 5 to 30.
“ “ Pura.....	gr. 5 to 30.
“ Chloridum.....	gr. 5 to 30.
“ Citras.....	gr. 5 to 30.
“ “ Mist.....	$f\overline{3}$ 2 to 4.
“ Cyanidum.....	gr. $\frac{1}{8}$ to $\frac{1}{4}$.
“ et Sodii Tart. (Rochelle Salt).....	$\overline{3}$ 1 to 5.
“ Iodidum.....	gr. 3 to 30.
“ Nitras (Niter).....	gr. 3 to 20.
“ Permanganas.....	gr. $\frac{1}{2}$ to 3.
“ Permanganatis Liq.....	externally.
“ Phosphas.....	gr. 10 to 30.
“ Silicas (Soluble Glass).....	externally
“ Sulphas.....	$\overline{3}$ 1 to 2.
“ Sulpho Carbolas.....	gr. 1 to 5.
“ Sulphuretum.....	gr. $\frac{1}{8}$ to 5.
“ Tartras.....	$\overline{3}$ 1 to 3.
Prunus Virginiana (Wild Cherry).....	$\overline{3}$ $\frac{1}{4}$ to 1.
Pruni Virginianæ Fl. Ext.....	$f\overline{3}$ $\frac{1}{4}$ to 1.
“ “ Infus.....	$f\overline{3}$ $\frac{1}{2}$ to 1.
“ “ Syrup.....	$f\overline{3}$ 2 to 4.
“ “ Vinum.....	$f\overline{3}$ 1 to 2.
Pulv. Effervescentes (Soda Powders).....	No. 1 to 2.
“ “ Aper. (Seidlitz Powders) No. 1 to 2.	
Quassia.....	gr. 1 to 5.
Quassiæ Ext.....	gr. 5 to 10.

Quassia Fl. Ext.....	<i>f</i> 3 $\frac{1}{4}$ to 1.
“ Infusum.....	<i>f</i> 3 $\frac{1}{2}$ to 2.
Quinia (Quinine).....	gr. 1 to 30.
Quinia Bisulphas.....	gr. $\frac{1}{8}$ to $\frac{1}{4}$.
“ Salicylas.....	gr. 1 to 20.
“ Sulphas.....	gr. 1 to 20.
Quinidia.....	gr. 2 to 30.
Quinidia Sulphas.....	gr. 2 to 30.
Rheum (Rhubarb).....	gr. 5 to 30.
Rhei Ext.....	gr. 3 to 15.
“ Pulv. Comp.....	3 $\frac{1}{4}$ to 1.
“ Pilulæ.....	3 gr. in each.
“ Syrup.....	<i>f</i> 3 2 to 4.
“ “ Arom.....	<i>f</i> 3 2 to 4.
“ Tinct.....	<i>f</i> 3 2 to 4.
Rosmarinus (Rosemary).....	gr. 20 to 40.
Rosmarini Oleum.....	gtt. 3 to 6.
“ Spiritus.....	<i>f</i> 3 $\frac{1}{2}$ to 1.
Rubi (Blackberry) Fl. Ext.....	<i>f</i> 3 $\frac{1}{4}$ to 1.
“ Syr.....	<i>f</i> 3 1 to 3.
Ruta (Rue).....	gr. 10 to 20.
Rutæ Confectio.....	gr. 20 to 60.
“ Oleum.....	gtt. 1 to 6.
Saccharum Lactis (Sugar of Milk).....	ad lib.
Salix (Willow).....	3 $\frac{1}{4}$ to 1.
Salicis Fl. Ext.....	<i>f</i> 3 $\frac{1}{4}$ to 1.
Salicylate of Soda.....	gr. 10.
Salicylicum Acidum (Salicylic Acid).....	gr. 6 to 40.
Salvia (Sage).....	gr. 15 to 30.
Salviæ Fl. Ext.....	<i>f</i> 3 $\frac{1}{4}$ to 1.
“ Infus.....	as gargle, ad lib.
Sanguinaria (Bloodroot).....	gr. 1 to 8.
Sanguinariæ Acetum.....	gr. 20 to 40.
“ Ext.....	gr. $\frac{1}{4}$ to 1 $\frac{1}{2}$.
“ Fl. Ext.....	gr. 5 to 20.
“ Tinct.....	gtt. 10 to 40.
Sarsaparilla.....	gr. 15 to 40.
Sarsaparillæ Decoc. Comp.....	<i>f</i> 3 3 to 6.
“ Fl. Ext.....	<i>f</i> 3 $\frac{1}{4}$ to 1.

Sarsaparillæ Fl. Ext. Comp.....	$f\overline{3}$ $\frac{1}{4}$ to 1.
“ Syrupus Comp.....	$f\overline{3}$ 2 to 4.
Sassafras	$f\overline{3}$ $\frac{1}{2}$ to 1.
“ Mucilago.....	ad lib.
“ Oleum.....	gtt. 2 to 10.
Scilla (Squill).....	gr. 1 to 3.
Scillæ Acetum.....	gtt. 10 to 30.
“ Fl. Ext.....	as expectorant, gtt. 2 to 10.
“ “ “	as emetic, $f\overline{3}$ $\frac{1}{4}$ to $\frac{1}{2}$.
“ Oxymel	$f\overline{3}$ 1 to 2.
“ Syrupus	$f\overline{3}$ $\frac{1}{4}$ to 1.
“ “ Comp.....	$f\overline{3}$ $\frac{1}{8}$ to 1.
“ Tinct.....	gtt. 10 to 60.
Senegæ Fl. Ext.....	gtt. 10 to 30.
“ Infus.....	$f\overline{3}$ 1 to 2.
“ Syrupus.....	$f\overline{3}$ 1 to 2.
Senna.....	$\overline{3}$ $\frac{1}{2}$ to 2.
Sennæ Confectio.....	$\overline{3}$ 1 to 4.
“ Fl. Ext.....	$f\overline{3}$ $\frac{1}{2}$ to 2.
“ Inf.....	$f\overline{3}$ 2 to 4.
“ Tinct	$f\overline{3}$ 2 to 6.
Serpentariæ Fl. Ext.....	gtt 10 to 40.
“ Tinct.....	$f\overline{3}$ $\frac{1}{2}$ to 2.
Sinapis (Mustard).....	externally.
Soda (Caustic Soda).....	externally.
Sodæ Liquor	gtt. 5 to 20 dil.
Sodii Arsenias	gr. 1-16 to $\frac{1}{2}$.
“ Arseniatis Liq	gtt. 2 to 10.
“ Benzoas.....	gr. 6 to 60.
“ Bicarbonas	gr. 5 to 60.
“ Boras (Borax).....	gr. 2 to 20.
“ Bromidum.....	gr. 5 to 60.
“ Carbolas	gr. 1 to 10.
“ Carbonas.....	gr. 3 to 15.
“ “ Exsic	gr. 2 to 15.
“ Citras.....	gr. 2 to 15.
“ Chloras	gr. 2 to 10.
“ Chloridum (Common Salt) as emetic, $\overline{3}$ $\frac{1}{2}$ to 2.	
“ et Pot. Tart. (Rochelle Salt).....	$\overline{3}$ 1 to 5.

Sodii Sulphas (Glauber's Salt)	℥ 2 to 8.
Somnal.	gtt. 20 to 40.
Spigeliæ Fl. Ext. (Pinkroot)	℥ 2.
“ et Sennæ Fl. Ext.	℥ ½ to 4.
Spiritus Frumenti (Whiskey)	ad lib.
“ Genevæ (Gin)	ad lib.
“ Rectificatus (Alcohol)	ad lib.
“ Vini Gallici (Brandy)	ad lib.
“ Myrciæ (Bay Rum)	externally.
Stillingiæ Fl. Ext.	gtt. 10 to 40.
Stramonii Unguentum	externally.
Strychniæ Sulphas	gr. 1-60 to ½.
“ Liquor.	gtt. 3 to 15.
Sulphonal.	gr. 15 to 30.
Sulphuricum Acidum	not internally.
“ “ Aromat	gtt. 10 to 30.
“ “ Dil.	gtt. 10 to 30.
Sulphur	℥ ½ to 2.
Sulphurosum Acidum (Sulphurous Acid) ..	gtt. 5 to 15 dil.
Sumbul Ext.	gr. 1 to 2.
“ Tinct.	℥ 1 to 4.
Tannicum Acidum	gr. 2 to 10.
Tannici Acidi Glyceritum	gtt. 10 to 60.
Taraxacum (Dandelion)	℥ 1 to 2.
Taraxaci Ext.	gr. 5 to 30.
Terebene	gtt. 10 to 25.
Terebinthina (Turpentine) ...	in emulsion, gtt. 5 to 15.
Terebinthinæ Canadensis (Balsam of Fir) ..	
“ Oleum.	in emulsion, gtt. 5 to 15.
Testa Præparata (Oyster Shell)	gr. 20 to 40.
Thymus (Thyme)	gr. 20 to 40.
Thymi Fl. Ext.	℥ ½ to 1.
“ Oleum.	gtt. 1 to 10.
Thymicum Acidum	externally.
Thymol.	gr. 2 to 10.
Tolutanum Bal. (Balsam of Tolu)	gr. 10 to 30.
Tolutani Syrupus.	℥ 1 to 2.
“ Tinct.	℥ 1 to 2.
Turpentine.	gtt. 5 to 10.

Uvæ Ursi (Bearberry) Fl. Ext.	℥ 2 to 4.
Valeriana (Valerian)	℥ $\frac{1}{4}$ to 1.
Valerianæ Ext.	gr. 3 to 12.
" Tinct	℥ 1 to 4.
" " Ammoniata.	℥ $\frac{1}{2}$ to 2.
Veratria	gr. 1-60.
Veratrum Album (White Hellebore)	gr. 1 to 3.
Veratri Albi Ext.	gr. $\frac{1}{4}$ to $\frac{1}{2}$.
" " Fl. Ext	gtt. 2 to 10.
" " Vinum.	gtt. 15 to 40.
Veratrum Viride.	gr. $\frac{1}{2}$ to 2.
Veratri Viridis Ext.	gr. $\frac{1}{8}$ to $\frac{1}{2}$.
" " Fl. Ext.	gtt. 1 to 5.
" " Tinct	gtt. 2 to 12.
Viburnum Prunifolium (Black Haw)	℥ $\frac{1}{4}$ to 1.
Viburni Fl. Ext.	℥ $\frac{1}{2}$ to 1 $\frac{1}{2}$.
Vinum Portense (Port Wine)	ad lib.
Vinum Xericum (Sherry Wine).	ad lib.
Zinci (Zinc) Acetas.	gr. $\frac{1}{2}$ to 3.
" Bromidum.	gr. $\frac{1}{2}$ to 2.
" Oxidum.	gr. 1 to 5.
" Phosphas	gr. $\frac{1}{2}$ to 3.
" Phosphidum.	gr. 1-16 to $\frac{1}{3}$.
" Sulphas.	gr. $\frac{1}{2}$ to 30.
" Sulpho-Carbol.	gr. 1 to 3.
" Valerianas	gr. $\frac{1}{2}$ to 2.
Zingiber (Ginger).	gr. 5 to 30.
Zingiberis Infus.	℥ 1 to 2.
" Syrupus	℥ 1 to 2.
" Tinct.	℥ $\frac{1}{2}$ to 1.

The effects of the foregoing medicines will not be described here; they are so numerous and varied, that it would serve only to puzzle the nurse and not add to her practical knowledge. In making a study of her cases she will soon discover, both by the disease and the effect of the remedy ordered, whether the medicine given is cathartic, diuretic, diaphoretic, stimulant, or narcotic in its effect, or if she should be puzzled a judicious question addressed to the doctor will settle the matter.

A FEW IMPORTANT DEFINITIONS.

-
- ABLU'TION.** Application of cold or tepid water to the body.
- ABOR'TION.** The premature expulsion of the fetus.
- ABRA'SION.** A superficial excoriation of the skin.
- AB'SCESS.** A collection of pus in a cavity, the result of a morbid process ; it may occur in any organ of the body.
- ABSORB'ENT.** A name given to medicines used for absorbing any morbid process either by giving it internally or applying it externally ; also substances used in surgery which applied to a part absorb any discharges.
- AC'ARUS.** A name given to the itch insect.
- ACCLI'MATED.** Accustomed to a climate.
- ACERB'.** A taste of the acid and bitter (as that of unripe fruit).
- AC'ETATE.** A salt formed by the union of acetic acid with an alkaline, earthy, or metallic base.
- ACE'TUM.** Vinegar.
- ACHO'LIA.** Deficiency or want of bile.
- ACHROMATOP'SIA.** Inability to distinguish colors.
- AC'IDS.** Liquid, solid, or gaseous substances which unite with metals, etc., to form salts. Some of them have a sour taste.
- ACID'ULATE.** To render slightly acid.
- AC'ME.** The period of a disease when the symptoms are most violent.
- AC'NE.** A popular rash, accompanied sometimes by black heads and commonly seen on the face in youth.
- ACOUS'TIC.** Pertaining to sounds or hearing.
- ACQUIRED' DISEAS'ES.** Diseases that occur after birth,—not hereditary.
- ACUTE' DISEASE'.** A disease which, with more or less severity, has a rapid progress and is of short duration.
- AD'DISON'S DISEASE'.** A disease of the renal capsules, characterized by bronzing of the skin.
- ADDUC'TION.** The action by which parts are drawn toward the axis of the body.
- ADENITIS.** Inflammation of a gland.
- AD'IPOSE.** Relating to fat.
- ADIP'SIA.** Absence of thirst.
- ADQLES'CENCE.** The period between puberty and that at which the body attains its full development ; in man between the fourteenth and twenty-fifth year ; in woman between the twelfth and twenty-first year.
- ADULT' AGE.** The period which follows adolescence.
- ADYNA'MIA.** Debility of the vital powers.
- ALBU'MEN (or min).** A thick, glairy substance found in animal and vegetable life which gives its best example in the white of an egg.
- ALBU'MINOID.** Resembling albumen.
- ALBUMINU'RIA.** Albumen in the urine.
- ALGE'SIS.** Pain.

AL/KALI. The alkalies are substances possessing a caustic taste and uniting with acids to form neutral salts.

AL'TERATIVE. A medicine that produces a cure of a disease by slow and imperceptible degrees.

ALVE'OLUS. The socket of a tooth. *Alveoli*, plural.

AMAURO'SIS. Partial or complete loss of sight from deep-seated disease of the eye or brain.

AMBIDEX'TER. A person who uses both hands with equal facility.

AME'TRIA. Absence of the uterus.

AMNE'SIA. Loss of memory.

AMYLACEOUS. Containing starch.

ANÆSTHESIA. Privation of sensation.

ANÆSTHET'IC. That which causes loss of sensation.

ANASAR'CA. General dropsy.

ANASTOMO'SIS. The communication between bloodvessels.

AN'EURISM. A tumor caused by the dilatation of the walls of an artery.

ANGEI'TIS. Inflammation of bloodvessels.

ANGI'NA PECTORIS. A disease accompanied by great pain about the heart.

ANIDRO'SIS. Deficiency or absence of perspiration.

ANIMAL'CULA. Forms of animal life seen only with the aid of the microscope.

ANKYLO'SIS. A partial or complete stiffening of a joint. It is so called because the limb commonly remains in a state of flexion.

ANODIN'IA. Absence of labor pains.

AN'ODYNE. A medicine that relieves pain.

ANOREX'IA. Want of appetite. Indigestion.

ANOS'IA. Health, or freedom from disease.

ANOS'MIA. Loss of the sense of smell.

ANTEFLEX'ION. A simple bending forward of the body of the uterus.

ANTEVER'SION. Displacement of the uterus in which the fundus is turned forward.

ANTIDOTE. A medicine that will counteract a poison.

ANTIPERIOD'IC. A medicine that arrests periodical diseases or symptoms.

ANTIPHLOGIS'TIC. Counteracting or preventing inflammation.

AP'ATHY. Insensibility, indifference.

APE'RIENT. A laxative, a medicine used to open the bowels gently.

APHA'GIA. Inability to swallow.

APHA'SIA. Inability to speak, caused by cerebral disease.

APHO'NIA. Partial or total loss of voice.

APNŒ'A. Absence of breathing, or insensible respiration.

ARTHRI'TIS. Inflammation of a joint.

ARTHROPLAS'TIC. A term for an operation to form a false joint in case of ankylosis.

ASPHYX'IA. Suspended animation, produced by the nonconversion of the venous blood into arterial through interrupted or partial respiration.

ASPHYX'IATED. In a state of asphyxia.

ASPIRATOR. An instrument for the evacuation of the fluid contents of abscesses, cavities, etc.

ASSIMILATE. To convert by digestion a food into the organized tissues of the body.

ATOMIZER. An instrument which reduces a liquid to a fine spray or minute particles.

ATONIC. Relaxed; without strength or tone.

ATROPHY. Morbid diminution in the size of any part of the body, generally symptomatic.

ATROPINE. The active principle of belladonna.

ATTRITION. Friction or bruising. Chafing.

ATYPIC. Having no type; irregular.

AUDITION. The act of hearing.

AUGMENTATION. The stage of a disease in which the symptoms go on increasing.

AURA. A sensation of a vapor passing over the body, premonitory to an epileptic fit.

AURICULAR. Pertaining to the ear, especially the external ear.

AURISCOPE. An instrument for examining the ear.

AURIST. One skilled in treating diseases of the ear.

AURUM. Gold.

AUTOMATIC. That which acts of itself.

BACTERIA. Germs which are rodlike in shape.

BALNEOTHERAPY. Treatment of diseases by baths.

BALSAM. An oleoresinous liquid which exudes from certain trees, as balsam of Peru.

BELCHING. Eructation.

BERGAMOT. A small orange, from the rind of which an oil is obtained which is used in perfumes and sometimes in medicines.

BILE. A yellowish green, viscid, bitter fluid, secreted by the liver. It serves a useful purpose in digestion.

BILIOUS. Relating to bile; a name applied to certain diseases which are believed to be the effect of superabundance of the biliary secretion.

BINOCULAR. Pertaining to or affecting both eyes.

BIOLOGY. The science of life and of living things.

BIOTIC. Relating to life.

BISTOURY. A small knife used in surgery.

BLOTCH. A pustule; an eruption of large pimples.

BO-RATED. Containing borax.

BORBORYGM. The noise made by flatus in the intestines.

BOUGIE. A flexible cylinder, to be introduced into the urethra, cesophagus, rectum, etc., for the purpose of dilating these canals, when contracted.

BOULIMIA. An almost insatiable hunger; sometimes seen in hysteria and pregnancy.

BRASH. A sudden or transient attack of sickness. A rash or eruption.

BROMIDES. A class of remedies used to quiet the nervous system.

BROMISM. A general cachectic condition induced by the bromides when used too long.

BRONCHIAL TUBES. The two tubes and their ramifications, which arise from the bifurcation of the trachea and carry air to the small air spaces of the lungs.

BRONCHIOLE. A minute bronchial tube.

BRONCHITIS. Inflammation of the lining membrane of the bronchial tubes.

BUL/LA. A large vesicle containing watery fluids.

BUN'YON. An enlargement of the *bursa mucosa* at the inside of the ball of the great toe; it is accompanied by inflammation.

BUTTER OF CACA'O. The oil obtained from the kernels of the fruit of *Theobroma cacao*, or chocolate nut; used for suppositories.

CACHEX'IA. A condition in which nutrition of the system is depraved.

CAL'CULI. Hard, stony concretions most frequently found in the kidneys, bladder, and gall bladder.

CALLOS'ITY. Hardness and thickness of the skin.

CAL'LUS. The osseous matter thrown out between the fractured extremities of a bone, which acts as a cement and as a temporary bony formation.

CAR'BUNCLE. A large inflammatory tumor.

CAR'PUS. The part between the forearm and the hand.

CARTILAGE. A whitish, flexible, and elastic material covering the ends of bones.

CAT'ARACT. Opacity of the crystalline lens, which causes dimness or loss of sight.

CATHAR'SIS. A natural or artificial purgation.

CATHAR'TIC. A medicine, which causes purgation.

CATH'ETER. An instrument used to draw urine from the bladder. Until the use of the catheter is no longer necessary, the following articles should be kept together upon a tray: A bowl or old tin cup, capacity not exceeding a quart, for receiving the urine; a bowl in which the catheter lies covered with a weak solution of carbolic acid, 1-40 or 1-80; a piece of old muslin or linen, and a jar or small bottle of weak carbolized oil. The method of catheterizing a female is as follows: The nurse should first arrange the patient upon the back with knees well drawn up, the bowl for the urine being placed in the bed near the vicinity where it will be needed. The catheter should then be removed from the solution in which it lies and hot water run through it to warm it, and then it should be well oiled with carbolized oil. The thumb and first two fingers of the nurse should also be oiled. Standing at the left side of the bed, she should place the oiled fingers at the top of the entrance to the vagina and move them down about an inch where the *meatus*, or entrance of the urethra, will be distinctly felt,—when the oiled end of the catheter should be gently inserted several inches into the bladder. When the urine ceases to flow, gentle pressure from above over the region of the bladder or moving the catheter an inch or so from the bladder, will help the flow. The catheter should be withdrawn carefully and the finger should be placed on the end of it to avoid dropping any urine upon the bed. A piece of old muslin laid beneath the vessel

might prevent accidents. The nurse should learn to catheterize under the bedclothes; it is considered by some improper to allow any exposure, but if the patient cannot be catheterized without great difficulty or pain, lay aside the bedclothes and look for the *meatus* with the eye and then pass the catheter.

CEPHALAL'GIA. Every kind of headache, symptomatic or ideopathic.

CHRON'IC DISEAS'ES. Those whose duration is long or whose symptoms develop slowly.

CHYLE. A fluid, formed from chyme in the small intestines by the intestinal juices.

CHYLIFICA'TION. The formation of chyle.

CHYME. The pulp, formed by food mixed with gastric juice after it has been for some time in the stomach.

CICA'TRIX. A scar.

CIRCULA'TION. The motion of the blood through the different blood-vessels of the body.

COLI'TIS. Inflammation of the colon.

COLLAP'SUS. A complete prostration of strength.

CO'OLON. The portion of the large intestine which extends from the cæcum to the rectum.

CO'MA. A profound unconscious condition from which it is impossible to arouse the patient.

CONCUS'SION. The shock or injury communicated to an organ, especially the brain, by a violent fall or blow.

CONGES'TION. The accumulation of blood or serum in an organ.

CONSTIPA'TION. A state of the bowels in which the evacuations are infrequent and expelled with difficulty.

CONTU'SION. A bruise.

CONVALES'CENCE. The state during recovery of health after disease.

CONVUL'SION. Violent and involuntary contractions of muscles, by which the body and limbs are distorted.

COR'NEA. One of the coats of the eye.

CORNEI'TIS. Inflammation of the cornea.

CORROB'ORANT. Any substance which strengthens.

CORRO'SIVE. Substances which, when placed in contact with living parts, gradually disorganize them.

CORY'ZA. An acute attack of "cold in the head."

COS'TIVE. Constipated.

COUN'TER EXTE'NSION. The opposite of extension; it consists in holding firmly and immovably the upper part of the limb while extension is practiced on the lower part.

COXAL'GIA. Hip joint disease.

COXI'TIS. Inflammation of the hip joint.

CRAMP. A sudden, involuntary, and highly painful contraction of the muscles.

CRANIOPLAS'TY. An operation for the restoration of the bones and the soft parts of the cranium.

CRANIO'TABES. Softening of the bones of the cranium.

CYANO'SIS. A lividity of the skin caused by deficient oxidation of the blood.

DEFERVES'CENCE. The period in which the morbidly elevated febrile temperature is declining toward the natural standard.

DEFIBRINIZED. A term applied to blood from which the fibrin has been removed.

DELETERIOUS. Injurious.

DELIR'IUM. Wandering of the mind in disease.

DEMENTIA. A form of insanity, characterized by a total loss of the faculty of thought.

DEMUL'CENT. A soothing or protecting substance, as slippery elm, mucilage, etc.

DENTIFRICE. A powder or paste for cleansing the enamel of the teeth, as charcoal united with cream of tartar.

DENTI'TION. The eruption of the teeth.

DEPILA'TION. Loss of hair, spontaneously or otherwise.

DEPLE'TION. The act of emptying the vessels.

DERMATITIS. Inflammation of the skin.

DER'MATOID. Similar to the skin.

DIABETES (Mellitus). A disease characterized by great increase in amount of urine and by the presence of sugar in the urine.

DIAGNO'SIS. That part of medicine the object of which is the discrimination of diseases and the knowledge of the symptoms of each.

DIAPHORET'IC. A medicine to cause sweating.

DI'APHRAGM. A large muscle, stretched transversely between and separating the thoracic and abdominal cavities.

DIARRHŒ'A. A disease characterized by frequent liquid evacuations of the bowels, and generally due to inflammation or irritation of the mucous membrane of the intestines.

DIATH'ESIS. A predisposition to a disease.

DIGES'TION. A function, by means of which food, when introduced into the digestive canal, undergoes changes which fit it to be assimilated.

DIPHTHERIA. An inflammation, generally of the throat, characterized by the false membrane covering the inflamed surface.

DIPSOMA'NIA. An insatiable desire for intoxicating drinks.

DIURE'SIS. An abundant secretion of urine.

DIURET'IC. A medicine which increases the secretion of urine.

DOR'SAL. Pertaining to the back.

DRAS'TIC. A term applied to purgatives which act powerfully.

DUODENITIS. Inflammation of the duodenum.

DUODE'NUM. The first part of the intestinal canal.

DU'RA MA'TER. A fibrous, semitransparent membrane, of pearly whiteness, thick and very resisting; lines the cavity of the cranium and the spinal canal.

DYS'ENTERY. A form of inflammation of the mucous membrane of the large intestine.

DYSMENORRHŒ'A. Painful menstruation.

DYSPEP'SIA. Difficult or impaired digestion.

ECZEMA. An inflammatory disease of the skin with great itching and watery exudation.

EM'BOLUS. A substance carried along by the blood until it lodges in, and plugs up, a vessel.

EMBROCA'TION. A fluid application to be rubbed on any part of the body.

EMPYE'MA. A collection of pus in some cavity of the body, particularly in that of the pleura.

ENDARTERII'TIS. Inflammation of the lining of an artery.

ENDEM'IC. A disease is said to be endemic when it is owing to some peculiarity in a situation or locality.

ENDER'MIC. A term applied to the method of treating diseases by placing the medicine in contact with the skin, especially after the cuticle has been removed.

ENDOCARDI'TIS. Inflammation of the internal membrane of the heart.

EN'TERIC FE'VER. Intestinal fever; typhoid fever.

ENTERI'TIS. Inflammation of the intestines.

ENTEROCÆ'LE. Hernia, or rupture.

ENTEROCOLI'TIS. Inflammation of the small intestine and the colon.

EPISTAX'IS. Bleeding at the nose.

EXCORIA'TION. A slight wound removing only the skin.

EXCRE'TION. The throwing off of those matters which are supposed to be useless.

EXFOLIA'TION. The separation of the dead portions of a bone.

EXOPHTHAL'MOS. A protrusion of the eye from its orbit.

EXPECTORA'TION. The act of expelling from the chest matters or secretions collected there.

EXPIRA'TION. The act of expelling air from the chest or lungs.

EXTEN'SION. An operation in surgery in which, either by the hands alone or by means of straps, a fracture or luxated limb is pulled strongly to restore it to its natural position.

EXTEN'SOR. A muscle whose office it is to extend any part of the body.

FÆCES. The alvine evacuations.

FAU'CES. The upper part of the throat.

FE'BRILE. Relating to fever.

FEM'ORAL. Relating to the thigh.

FE'TUS. The unborn child.

FI'BER. A solid organic filament which enters into the composition of every animal and vegetable texture.

FI'BROID. Fibrous; composed of fibers.

FLESH. All the soft parts of an animal.

FLEX'OR. A muscle whose office it is to bend certain parts.

FLUCTUA'TION. The undulation of a fluid collected in any cavity when tapped or shaken.

FOMENTA'TION. A warm lotion.

FRACTURE. The breaking of a bone. A simple fracture is one in which the bone is broken but without any external communication; a compound fracture is a division of the bone with a wound of the skin

communicating with the bone (the bone sometimes protruding) ; a comminuted fracture is one in which the bone is broken into more than two fragments and the lines of fracture communicate ; in a greenstick fracture the bone is bent but not completely broken off, this form usually occurring in children.

GALL. Bile.

GALL BLAD'DER. A small sac beneath the liver to retain bile.

GAN'GLION. A knotlike enlargement in the course of a nerve.

GAN'GRENE. Death of any part of the body, as of a limb.

GAS'TRIC. Belonging to the stomach.

GASTRI'TIS. Inflammation of the stomach.

GLOSSI'TIS. Inflammation of the tongue.

GOUT. A disease characterized by an inflammation of the fibrous and ligamentous parts of the joints.

GRANULA'TION. Reddish, conical, fleshlike shoots, which form at the surface of suppurating wounds and ulcers.

GRAV'EL. A disease occasioned by small concretions, which form in the kidneys and pass along to the bladder and are generally expelled with the urine, attended with great pain.

HALLUCINA'TION. Perceiving objects which are imaginary.

HANG'NAIL. A portion of skin detached and loose at the side of a finger nail.

HEMATU'RIA. Blood in the urine.

HEMICRA'NIA. Pain confined to one side of the head.

HEMPLE'GIA. Paralysis affecting one side of the body.

HEMOP'TYSIS. Hemorrhage from the lungs.

HEMOSTAT'ICS. Medicines to stop hemorrhage.

HEMOTHO'RAX. Extravasation of blood into the pleural cavity.

HEPATI'TIS. Inflammation of the liver.

HER'NIA. A term generally applied to a protrusion of a part of the intestines through a natural or an accidental opening of the abdomen ; when a hernia can be restored to its natural cavity by the aid of pressure it is said to be reducible. Sometimes, however, the portion around the displaced intestine becomes constricted (as if a string were tied about it) ; it then becomes irreducible and the circulation through the portion beyond the constriction may be cut off, and gangrene of the intestine would speedily follow unless operated upon. When the blood supply is cut off and gangrene threatens it is called a strangulated hernia.

HYDROTHO'RAX. Dropsy of the pleuræ.

HYPERÆSTHE'SIA. Excessive sensibility.

HYPEREM'ESIS. Excessive vomiting.

HYPER'THROPY. Overgrowth of any part ; abnormal enlargement.

HYP'NOTISM. Magnetic sleep. The production of sleep or unconsciousness by suggestion or will power over another.

IMBECIL'ITY. Weakness of the intellect.

IMBIBI'TION. The action by which a body absorbs or takes up a fluid.

INANIT'ION. The exhausted state caused by inability to assimilate food.

INCARCERA'TION. Hernia is incarcerated when owing to constriction

about the neck of the hernial sac or elsewhere, it cannot be reduced with facility.

INDURA'TION. The hardness which supervenes in any part, generally as the result of inflammation.

INFLUEN'ZA. A severe form of catarrh.

INHALA'TION. The act of drawing air or vapor into the lungs.

INOCULA'TION. An operation by which smallpox, for instance, may be communicated, by introducing the virus of the disease into the system by means of a puncture or scratch made on the skin.

INSALIVA'TION. The mixture of the food with the saliva and with the other secretions of the mouth.

INSAN'ITY. This term includes all the varieties of unsound mind.

INSOLA'TION. Sunstroke.

INSOM'NIA. Sleeplessness.

INSPIRA'TION. The act by which the air penetrates into the interior of the lungs.

INSUFFLA'TION. The act of blowing a gas or vapor or powder into any cavity of the body.

INTEG'UMENT. The skin.

INTERCOS'TAL. Situated between the ribs.

INTERCUR'RENT. A term applied to diseases which occur in the course of other diseases.

INTEROS'EOUS. Situated between bones.

INTERTRI'GO. Chafing.

INTES'TINE. A musculo-membranous canal, variously convoluted, which extends from the stomach to the anus and is situated in the abdominal cavity.

IRREDU'CIBLE. A term given to fractures, herniæ, luxations, etc., when they cannot be reduced.

IR'RITANT. That which causes irritation.

JACTITA'TION. Jerking of muscles in low forms of disease.

JEJU'NUM. The part of the small intestine between the duodenum and ilium.

JUG'ULAR VEIN. The large vein which passes along the side of the neck.

KLEPTOMA'NIA. Insanity with an irresistible propensity to steal.

LACERA'TION. Rupture or tearing of a part.

LACH'RYMAL. Pertaining to the tears.

LAX'ATIVE. A medicine which gently opens the bowels.

LE'SION. Any morbid change or injury.

LE'THAL. Mortal.

LETH'ARGY. A continued stupor from which it is almost impossible to arouse the patient.

LEUCÆ'MIA. See leucocythemia.

LEUCOCYTHE'MIA. A condition of blood in which there is a superabundant development of white corpuscles.

LIG'AMENT. A name given to fibrous structures which serve to unite bones and form joints.

LIN'IMENT. An unctuous medicine applied externally.

LITHOT'OMY. The operation by which a stone is extracted from the bladder by an incision.

LIV'ER. The largest gland in the body.

LO'TION. A fluid applied externally.

LYMPH. A thin, whitish fluid contained in the lymphatic and thoracic ducts of animals.

LYMPHADENI'TIS. Inflammation of a lymphatic gland.

MALIG'NANT. A term applied to any disease whose symptoms are hostile to life; fatal.

MASTI'TIS. Inflammation of the breast.

MEM'BRANE. A term given to different thin organs which represent a species of supple, more or less elastic, webs, lining or covering certain tissues or organs and intended to absorb or secrete certain fluids.

MENIN'GES. The membranes that envelop the brain and the spinal cord.

MENINGI'TIS. Inflammation of the meninges.

MENORRHA'GIA. Excessive flow of the *menses*.

MEN'SES. The sanguineous evacuation from the uterus, the monthly occurrence of which constitutes menstruation.

MES'ENTERY. Several duplicatures of the peritoneum, which maintain the different portions of the intestinal canal in their respective positions.

METRI'TIS. Inflammation of the womb.

METRORRHA'GIA. Hemorrhage (not menstrual) from the womb.

MICTURI'TION. Urination.

MORBIF'IC. Causing disease.

MYOCAR'DIUM. The muscular structure of the heart.

MYO'MA. A term applied to a muscular tumor.

MYO'PIA. Shortsightedness.

NEPHRI'TIS. Inflammation of the kidneys.

NOSTAL'GIA. Homesickness.

OSTEI'TIS. Inflammation of bone.

PALPITA'TION. An abnormal fluttering or quick, nervous beating of the heart.

PARAL'YSIS. Abolition or great diminution of motion, and sometimes sensation, of any part.

PARAPLE'GIA. Palsy of the lower half of the body, including often the bladder and rectum.

PERICARDI'TIS. Inflammation of the pericardium.

PERICAR'DIUM. The membranous sac which encloses the heart.

PERIOS'TEUM. A white, fibrous, resisting medium surrounding the bones.

PERIOSTI'TIS. Inflammation of the periosteum.

PERITONE'UM. A serous membrane which lines the abdominal cavity and covers the abdominal viscera.

PERITONI'TIS. Inflammation of the peritoneum.

PERITYPHLI'TIS. Inflammation of the areolar tissue surrounding the cæcum.

PERIU'TERINE. Surrounding the uterus; applied to inflammation of the areolar tissue surrounding the uterus.

PHLEBI'TIS. Inflammation of a vein.

PLEX'US. A network of nerves or of bloodvessels.

PNEUMO'NIA. Inflammation of the lungs; sometimes called lung fever.

PROGNO'SIS. A judgment regarding the future progress and the termination of a disease; usually referring to the physician's judgment.

PUS. A yellowish secretion from inflamed textures, such as ulcers, abscesses, etc.

PYÆ'MIA. Purulent poisoning.

PYELI'TIS. Inflammation of the pelvis and also of the calices of the kidney.

RECTI'TIS. Inflammation of the rectum.

RETROFLEX'ION. The term used when the uterus is bent backward.

RETROVER'SION. In this position the body of the uterus is turned backward toward the concavity of the sacrum, while the neck is directed toward the pubes.

SCIR'RHUS. A cancer characterized by great hardness.

SCROTUM. The integuments that cover the *testes*.

SCYB'ALA. Hardened fecal masses discharged in round lumps.

SED'ATIVES. Medicines that directly depress the vital forces and especially the circulation.

SOM'NOLENCY. Drowsiness.

SOR'DES. A dirty looking collection on the teeth and lips in low fevers and other low diseases.

SPONDYLI'TIS. An inflammation of the vertebræ.

SPRAIN. A violent straining or twisting of the soft parts around a joint.

SPU'TUM. The salival discharge ejected from the mouth in the act of spitting.

STIM'ULANT. A medicine having the power of exciting organic action.

STOMATI'TIS. Inflammation of the mouth.

STRANGULA'TION. Too close constriction of a part.

STRAN'GURY. Extremely painful evacuation of the urine.

STRYCH'NIA. An alkaloid poison from *nux vomica*.

SUBCUTA'NEOUS. Placed immediately under the skin.

SUDAM'INA. Small vesicles which appear upon the skin, especially in fevers.

SUFFOCA'TION. Suspended animation or death from impeded respiration.

SUPPURA'TION. The formation or secretion of pus.

SYMPATHET'IC. Caused by sympathy. Sympathetic affections of an organ are those morbid phenomena which supervene without any morbid cause acting directly on the organ but are caused by a disease in another organ or tissue.

SYNOVI'TIS. Inflammation of the synovial membrane.

TOR'MINA. Acute colicky pains in dysentery.

TORTICOL/LIS. Stiff neck; wryneck.

TOXÆ'MIC. Pertaining to a poisoned state of the blood.

TOX'IC. Poisonous.

TRANSFUSION. The injecting of blood from a man or animal into the veins of a patient.

TRAUMATIC. Relating to a wound.

UL'CER. An open, suppurating sore which appears on the skin or elsewhere, and is caused by some local disease or constitutional cause.

UMBILICAL. Relating to the navel.

URINE. An excrementitial fluid secreted by the kidneys; of a yellow color and a peculiar odor. The specific gravity of the normal urine is about 1.014 to 1.025. Its changes are various, according to conditions of health, different times of the year and the day, and the various occupations. Medicines will frequently change the odor and color of the urine and cause suppression and retention, as well as a too profuse flow. Diseases also cause various changes in the color and quantity; in diabetes there is a profuse flow; in certain stages of Bright's disease a scanty flow. By testing urine with various chemicals and heat, physicians discover many diseases. For this test the following articles are needed: A urinometer to test the specific gravity, pipettes and test tubes, an alcohol lamp, nitric acid, litmus paper, etc. An acid urine will turn blue litmus paper red; an alkaline urine will turn red litmus paper blue. To test urine for albumen a test tube should have in it a few drops of nitric acid and then with the pipette the urine should be very carefully laid upon the nitric acid. If albumen is present a distinct white ring will form between the urine and the acid. There is a test for albumen by boiling; but the method given is easier and a surer test for nurses to use.

INDEX.

- Abbreviations**, 283-286.
Abdomen, 71-73.
Acupressure, 119.
Afterpains, 199.
Albuminuria, 89, 95, 176.
Alimentary canal, 71; **Organs of**, 71-75.
Amenorrhœa, 223.
Anæsthetics, 126-127.
Anastomosis, 62.
Aneurism, 61.
Ankylosis, 52.
Antiseptics.—Use in fevers, 86; Use during labor, 182; Principles of, 111; List of, 123; Preparation of solution, 124; In an operation, 247.
Apnœa, 123.
Apoplexy, 169.
Arteries.—Definition, 60; Structure of, 61-62; Accompanied by veins, 63; Direction of, 65-66.
Baby, Care of, 203-218; Resuscitating, 204-205; Bathing, 205-206; Wardrobe, 205-206; Food, 207, 279-281; Sleep, 208; Airing, 209; Colic, 209; Weighing, 209; First movement of bowels, 210; To prevent sore mouth, 210; The healthy baby, 210-212; The unhealthy baby, 212-218.
Bandages, 133-155; Danger in use of, 134; Material for, 134; Tension of, 135-136; Various kinds of, 118, 137-155.
Bath, Temperature for, 23, 27; Ordinary, 23-25; Hot, 27; Vapor, 27-29; Packs, 29-30; Half-baths, 30; Foot-bath, 30; Medicated bath, 30; Before labor, 186; The baby's, 206.
Bed-sores, 26-27.
Bladder, 75, 175, 219.
Bleeding, 42.
Blood, 59, 63-64.
Bones, 45-53; Composition of, 46; of cranium, 46; of face, 47-48; forming chest, 48; Ribs, 48-49; Spine, 49-50; of extremities, 50-52; Teeth, 53.
Brain, 57-58.
Breasts, 173, 199, 217.
Cantharides, 39, 167.
Capillaries, 60, 61.
Cartilage, 45, 49.
Catheter, 176, 220, 309.
Cautery, 44, 119.
Cavities, Three, 47; Pelvis, 51, 75; Thorax, 48.
Chymification, 69.
Circulation, Greater, 63-64; Pulmonary, 64; Portal, 64.
Collapse, 95, 156.
Compression, Arterial, 120; Digital, 120; of the brain, 168.
Concussion, 168.
Constipation, 174, 213.
Convulsions, In scarlet fever, 91; in children, 170, 217; during pregnancy, 179; after labor, 202.
Counter-Irritants, Kinds of, 35 Fomentations, 36; Ice-caps, 37; Poultices, 37-39; Blister, 39-40; Croton oil, 40; Iodine, 40; Liniments and ointments, 41; Leeches, 41-42; Cupping, 42-44; Cautery, 44; Use in hemorrhage, 109.
Croup, 218; Membranous, 96.
Cupping, Dry, 42-43; Wet, 43-44.
Defecation, 70.
Definitions, 289, 306-317.
Deglutition, 68.
Diarrhœa, 214.
Digestion, Organs of, 66-67; Six stages of, 67-70.
Diphtheria, Symptoms of, 93; Dangers of, 94-95; Contagion, 94-95; Sequelæ of, 95.
Doses, 288-305.
Dressing, The Lister, 129-130; Various kinds of, 137-155.
Drowning, 170-171.
Dysmenorrhœa, 224.
Ears, Discharge from, 214.

- Elastic rings, 118.
 Emergencies, 156-171.
 Enemata, Various kinds of, 33;
 Method of giving, 33-34; Nutrient,
 34; Importance of noting effects,
 35.
 Epilepsy, 169.
 Epithelium, 55.
 Ether cone, 127.
 Eyes, Sore, 214-215.
 Fever, Puerperal or childbed, 192,
 201; Milk, 201; Definition of, 76;
 The three vital signs, 76-82; Gen-
 eral symptoms of, 83; Classifi-
 cation, 84; Diet, 85; Drink, 85;
 Ventilation, 85; Methods of treat-
 ing, 86; Scarlet fever, 88-92; Mea-
 sles, 92-93; Diphtheria, 93-96; Ty-
 phoid fever, 97-102; Pneumonia,
 103-105; Pleurisy, 105-106; Phthisis,
 106-110.
 Flexion, 120.
 Fomentations, 35-36.
 Food, for consumptives, 108; for
 infants, 207, 279-281; during preg-
 nancy, 178; before an operation,
 245; classification, 252; easily di-
 gested, 253-254; partially digesti-
 ble, 254; difficult to digest, 254;
 Milk, 254-258; Water, gruel, whey,
 etc., 258-262; Tea, 262; Coffee, 263;
 Chocolate, 264; Lemonade, 264;
 Wines, cordials, etc., 264-268; Jel-
 lies, 269-270; Cereals, 270-272;
 Broths, 272-273; Meats, 274-275;
 Fish, 276; Oysters, 276; Serving,
 276-279.
 Fumigating, 22.
 Gall bladder, 74.
 Garrot, 120.
 Germs, 111-113.
 Glands, 54-55.
 Gynecology, 219-224.
 Hair, 54.
 Healing of wound, by primary ad-
 hesion, 131; secondary adhesion,
 132; scabbing, 132; Defects in,
 131-132.
 Heart, 60-61.
 Hemorrhage, of bowels, 100; from
 lungs, 109; from stomach, 109;
 Suppression of, 114-120; Uterine,
 178, 188, 191-192; *Post partum*, 200-
 201.
 Hemorrhoids, 175, 180.
 Hemostatics, Internal vital, 116-
 117; Chemical vital, 117; Mechan-
 ical, 118-119.
 Hospital, Former errors in, 225-226;
 Site of, 227; Ventilation, 228-229;
 Cellar and three floors of, 229-230;
 Administration of, 231-232; Wards
 of, 233-242.
 Ice-caps, 37.
 Insanity, Puerperal, 193, 201-202;
 Various forms and treatment,
 239-241.
 Intestines, Small, 69-70, 73-74;
 Large, 70, 74.
 Joints, 52-53.
 Kidneys, 75.
 Knot, The surgical, 203.
 Labels, 124, 238.
 Labor, Signs and progress of, 180;
 False and true pains, 180; Three
 stages of, 181-182; Preparations for,
 182-186; Antiseptics, 187; Position
 of patient, 187-188; Holding uterus,
 188; Receiving the child, 188; The
 placenta, 189; Emergencies, 190-
 193; Contents of nurse's maternity
 bag, 193.
 Leeches, 41-42.
 Leucorrhœa, 177.
 Ligation, 119.
 Liniments, 41.
 Liver, 74.
 Lungs, The, 70-71; Diseases of the,
 103-110, 218.
 Lying-in period, 194-202; Care of
 breasts, 198-199; Afterpains, 199-
 200; Sitting up, 200; Complica-
 tions, 200-202.
 Lymphatics, 57.
 Malformations, 217.
 Massage, 31-33, 55.
 Mastication, 67.
 Measles, Symptoms of, 92; Nursing
 of, 93.
 Medicines, Care of, 19; Method of
 giving, 288; with doses, 288-305.
 Membranes, 55, 57, 70, 73.
 Menorrhagia, 224.
 Menstruation, 222-224.
 Mesentery, 73.
 Microbes, 111-113.
 Miscarriage, 174, 178-179.
 Mouth, Sore, 210, 216.
 Muscles, Structure of, 55; Names of,
 55-57.
 Nails, The, 54.
 Narcosis, 128.
 Nephritis, 89.
 Nerves, 57, 58.
 Œsophagus, 68, 71.
 Operation, Surgical, 123-132; The
 place for, 125; Preparation of
 room for, 126, 242; Anæsthesia,
 126-127; Complications, 128; Aids
 to healing, 129-131; Manner of
 healing, 131-132; Linen, drugs,
 etc., 243; The day before operation,
 244; Day of operation, 244; Care
 of instruments, 245; Nurse's bath,
 246-247; Duties of the nurses, 247-
 250.
 Organs of body, 70-75.

- Packs, 29-30.
 Pancreas, 74.
 Paralysis, 95, 169.
 Perineum, 182, 220.
 Pharynx, 71.
 Phthisis, Contagion of, 106; Nursing of, 107; Exercise, 107; Clothing, 108; Diet, 108; Stimulants, 108; Hemorrhage, 109-110.
 Placenta, 189, 192.
 Pleuræ, 70.
 Pleurisy, Symptoms of, 105; Nursing of, 105; Drawing off liquid in case of effusion, 106.
 Pneumonia, Symptoms of, 103-104; Nursing of, 104; Jacket poultice, 104.
 Poisons, 156-167; Dr. Dulle's table of, 157-158; Acids, 159-161; Alkalies, 161; Alcohol, 161; Arsenic, 162; Cantharides, 167; Copper, 162; Fish, 166; Glass, 164; Insects, 167; Iodine, 162; Iron, 163; Lead, 163; Mercury, 163; Mushrooms, 166; Narcotics, 165; Phosphorus, 164; Serpents, 166; Silver, 164; Tin, 164; Vegetable irritants, 165; Volatile oils, 162; Zinc, 164.
 Poultices, 36, 37-39, 104.
 Pregnancy, 172-179; Duration of, 172; Signs of, 172-173; Morning sickness, 174; Quickening, 174; Disorders arising, 174-177; Diet, 178; Exercise, 178; Accidents, 178-179.
 Prehension, 67.
 Premature baby, 212.
 Prescription, Method of reading, 287-288.
 Pulse, 80-82.
 Qualities necessary in a nurse, 11-12.
 Rectum, 34, 74, 220.
 Respiration, 70-71, 82; Artificial, 171.
 Rickets, 217.
 Rubbing, 31-33.
 Scarlet fever, Symptoms of, 88-89; Treatment of, 89-92; Desquamation, 90; To reduce temperature, 90; Convulsions, 91; Danger of heart failure, 91.
 Shock, 128.
 Sinuses, 62, 63.
 Skin, The, 53-54, 215; Its appendages, 54.
 Spleen, 74.
 Starvation, 170.
 Sterilization of milk, 279-281.
 Stomach, 73.
 Suffocation, 170.
 Sutures, 47.
 Syncope, 91, 94, 128, 167.
 Technical terms, Use of, 3-4.
 Teeth, 53.
 Temperature, 76-80, 90, 98.
 Tendons, 55.
 Thermometer, Clinical, 79-80.
 Torsion, 119.
 Tourniquet, 118.
 Trachea, 68, 95.
 Tracheotomy, 95.
 Transfusion, 44.
 Treatment, Internal not given by nurse, 5.
 Trocar, 106.
 Twins, 190.
 Typhoid fever, 97-102; Period of incubation, 97; Symptoms, 97-98; Reducing temperature, 98-99; Hemorrhage of the bowels, 100; Position, 100; Sordes, 101; Relapse, 101; Disinfecting, 101.
 Umbilical cord, The, 203-204.
 Urine, Retention of, 175, 214; Incontinence of, 175; Testing, 317.
 Uterus, 175, 179, 188, 191, 220-221.
 Vaccination of child, 218.
 Vagina, 220; Discharges from, 176, 214.
 Varicosity, 177, 180.
 Veins, 60, 62-63.
 Ward, Care of, 17-22; Limit of assistance from convalescents, 18; Furniture, 19; Sweeping, 19; Discipline, 21; Fumigating, 22; Receiving ward, 233; Surgical, 234-235; Medical, 236; Obstetrical and maternity, 236-237; Nervous, 237-240; Children's, 241-242.
 Whooping cough, 218.

